

SGILIAU er CYFIAWNDER

Datblygu sgiliau ar gyfer cymdeithas fwy diogel a theg

SKILLS for JUSTICE

Developing skills for a safer and fairer society



CHOOSING OPTIMAL LOCATIONS FOR DISPUTE RESOLUTION CENTRES IN WALES

A MULTI-CRITERIA LOCATION-ALLOCATION MODELLING APPROACH

February 2014

Prepared by: Adegbola Ojo

Acknowledgements

The author is grateful to the Welsh Government for providing the funding that enabled this research study to be conducted. Sincere gratitude also goes to the following colleagues within Skills for Justice for their immense support in securing data and contributing towards shaping the research and the report: Shelagh Goldie; Jon parry; Alison Merrifield; and Christine Castle. Thanks also go to the Mediation Research Steering Group and the organisations and independent mediators that supplied some of the data used for the analysis.

© Copyright JSSC 2014.

All rights reserved. Skills for Justice is registered in England and Wales as JSSC, a company limited by guarantee under Company no 4826715 at Distington House, Atlas Way, Sheffield S4 7QQ. Skills for Justice is a registered charity in England and Wales (charity no 1107141) and in Scotland (charity no SC38928)

This publication is available from www.sfjuk.com

T: 0114 261 1499

W: www.sfjuk.com

E: info@sfjuk.com

Table of Contents

Executive Summary	5
1. Context	8
1.1. Spatial Analysis for Dispute Resolution – Data Sources	9
1.2. Structure of the Report	12
2. Variations in Demand for Mediation Services.....	13
2.1. Neighbourhood Differences in Demand For Mediation Services.....	13
3. Distribution, Inequalities and Gaps in the Supply of Mediation Services	17
3.1. Spatial Density of Supply of Mediation Services	17
3.2. Demand-Supply Inequalities and Gaps	19
4. Choosing Optimal Locations for Dispute Resolution Centres.....	24
4.1. Model parameters, Assumptions and Data	25
4.2. Model Computation and Results.....	28
4.3. Further Evaluation of Solution Results.....	34
5. Summary.....	35
References	37
Appendices	38

List of Tables

Table 1.1: Structure of the 2011 ONS Output Area Classification	9
Table 2.1: Relative Likelihood Index for Adults to Use Family Mediation Services by 2011 OAC Groups	14
Table 3.1: Comparative Distribution of Mediation Service Providers by 2011 OAC Groups	20
Table 3.2: Computation of Index of Concentration of Mediation Providers by 2011 OAC Groups	22
Table 4.1: Ten Optimal Locations and their Corresponding Local Authorities	28
Table 4.2: Coverage of Optimal Locations	34

List of Figures

Figure 1.1: The Spatial Distribution of OAC Groups in Wales	11
Figure 1.2: Wales Adult Population Share by 2011 OAC Groups	12
Figure 2.1: Modelled Demand Index for Family Mediation Service Usage by 2011 OAC Groups	15
Figure 2.2: Modelled Relative Likelihood for Adults to Use Mediation Services	16
Figure 3.1: Spatial Distribution of Mediation Service Providers	18
Figure 3.2: Spatial Density of Supply of Mediation Services	19
Figure 3.3: Concentration Curve of Mediation Service Providers Ranked by Adult Population Penetration ..	23
Figure 3.4: Spatial Density of Supply of Mediation Services vs. Spatial Density of Predicted Demand	24
Figure 4.1: A, B and Minor Roads in Wales	25
Figure 4.2: Combined Network of A, B and Minor Roads in Wales	25
Figure 4.3: Spatial Distribution of Composite Demand Locations	26
Figure 4.4: Spatial Distribution of Candidate Locations	27
Figure 4.5: Optimal Location in Cardiff	29
Figure 4.6: Optimal Location in Newport	29
Figure 4.7: Optimal Location in Swansea	30
Figure 4.8: First Optimal Location in Caerphilly	30
Figure 4.9: Optimal Location in Wrexham	31
Figure 4.10: Optimal Location in Rhondda Cynon Taf	31
Figure 4.11: Optimal Location in Neath Port Talbot	32
Figure 4.12: Optimal Location in the Vale of Glamorgan	32
Figure 4.13: Optimal Location in Carmarthenshire	33
Figure 4.14: Second Optimal Location in Caerphilly	33

Executive Summary

The Welsh Government recognises the importance of an agile alternative dispute resolution system. It has therefore commissioned the research study documented in this report. This study is part of the second phase of a robust research programme aimed at investigating the viability and sustainability of setting up dispute resolution centres in Wales. The centres are expected to provide a wide range of functions for mediators, training providers and those seeking mediation services. The first phase of the study adopted a mixed-methodological approach to undertake a situational assessment and gauge the appetite for the proposed centres.

Following the detection of genuine appetite amongst a variety of stakeholders for the proposed centres, the prime focus of this research study is to use multi-criteria spatial statistical modelling to calibrate the selection of optimal locations for the centres.

The indices of mediation demand suggest that Aspirational Multicultural Families are probably likely to be more disposed towards referral for family mediation. Adults within this neighbourhood type are likely to use mediation services at more than double the national average rate for Wales. Residents of Aspirational Multicultural Families are likely to live in semi-detached or terraced houses, although living in detached houses will not be uncommon. It is most likely they will be social rented, although some will be privately rented. These types of neighbourhoods also comprise below average number of residents born in EU countries. Residents are likely to have medium to low level qualifications and most likely be employed in the primary or secondary industries and use private transport to get to work.

Another typology with about double the national average level of usage is the Connected Achievers Group. These neighbourhoods are characterised by an above average number of young adults. They are likely to live in semi-detached or terraced houses that they own or rent privately. The ethnicity of the group reflects an above average of residents born in EU countries. Residents are likely to have high levels of qualifications and most likely be employed full-time in the tertiary sector and use public transport to get to work.

Traditional Trades neighbourhood types also exhibit very high disposition towards mediation usage. Residents of these neighbourhoods are most likely to work in the primary or secondary sectors, and most likely to walk, cycle or use an alternative to standard public or private transport to get to work.

Some of the Local Authorities where mediation providers are disproportionately located include: Cardiff; Rhondda Cynon Taf; The Vale of Glamorgan; Newport; Bridgend; Swansea; Neath Port Talbot; Powys (*South of this Local Authority); Caerphilly; Wrexham; and Pembrokeshire. Traditional Trades and Late Retirement communities (older demographic, with residents over the retirement age) account for roughly one-quarter of these providers.

Relative to the adult population, there is a disproportionate concentration of mediation providers within Aspirational Migrants neighbourhood typology. For every 1000 adult residents of this neighbourhood type, there are more than two mediation service providers. The population of Aspirational Migrants neighbourhoods is most likely to be young ethnically diverse adults.

Households are less likely to contain school age children, or speak English or Welsh as their main language. They are likely to live in flats that they most probably rent privately. Residents are more likely to have higher-level qualifications and be employed full-time in the tertiary sector and use public transport to get to work.

Inequalities do exist in the concentration of mediation service providers. The analysis suggests that around 35% of mediation service providers would need to be redistributed across different neighbourhood types in order to produce an exact correspondence between mediation service providers and adult population. Further analysis also reveals that approximately 40% of mediation providers are situated within the neighbourhoods of three-quarters of all adults in Wales.

Following the calibration of the location-allocation model, a sub-set of ten Wards were chosen from the 881 Wards in Wales as potential sites for the mediation centres based on predetermined parameters. Nine of the ten wards are located in South Wales. Only one of them (Offa) is situated in the northern half of the country.

The optimal Ward chosen in Cardiff is Cathays and based on the model results, it is also likely to attract potential users from the Vale of Glamorgan and Caerphilly.

The optimal Ward chosen in Newport is Stow Hill and based on the model results, a mediation centre at this site is also likely to attract potential users mainly from Torfaen and a small proportion from Caerphilly.

The optimal Ward chosen in Swansea is Cwmbwrla but the evidence derived from the model results suggests that users from adjoining Local Authorities are unlikely to patronise the centre.

The first optimal Ward chosen in Caerphilly is Cefn Fforest and based on the model results, a mediation centre at this site is also likely to attract potential users mainly from Blaenau Gwent and from some pockets of neighbourhoods in Merthyr Tydfil.

The second optimal Ward chosen in Caerphilly is Twyn Carno. Results from the analysis show that the majority of users of a centre in this location are likely to come from outside Caerphilly. This site may not necessarily attract users from inside its parent Local Authority. The two adjoining Local Authorities that are likely to provide the majority of the sites users are Blaenau Gwent and Merthyr Tydfil.

The optimal Ward chosen in Wrexham (and north Wales) is Offa. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Wrexham.

The optimal Ward chosen in Rhondda Cynon Taf is Rhondda. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Rhondda Cynon Taf and pockets of neighbourhoods in Caerphilly.

The optimal Ward chosen in Neath Port Talbot (and north Wales) is Neath East. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Neath Port Talbot.

The optimal Ward chosen in the Vale of Glamorgan is Buttrills. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within the Vale of Glamorgan.

The optimal Ward chosen in Carmarthenshire is Bigyn. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Newport. However, based on the model parameters and assumptions, a mediation centre at this site is also likely to attract potential users mainly from Swansea.

1. Context

Disputes involve parties in a wide range of trades and sectors; therefore, the importance and impact of alternative dispute resolution within the UK justice system cannot be over-emphasised. However, recent evidence indicates that the majority of dispute resolution organisations and services are based outside Wales. This research study, commissioned by the Welsh Government, seeks to contribute towards the research programmes aimed at investigating the viability and sustainability of setting up dispute resolution centres in Wales. The centres are expected to provide a wide range of functions some of which include: promoting and raising awareness of all forms of dispute resolution; strengthening accessibility to mediation services and providers; improving the quality of mediators and mediation services; serving as a public arena for sourcing information and signposting potential users of mediation services; and providing mediation providers with access to training, peer support, best practice and Continuous Professional Development (CPD).

The first phase of the research programme attracted extensive interest from a wide range of stakeholders including mediators, businesses, professional organisations such as the Advisory, Conciliation and Arbitration Service (Acas), Chartered Institute of Arbitrators (CI Arb), the Civil Mediation Council (CMC), law firms and barristers chambers. During four focus groups, individual interviews and an online consultation, the intelligence garnered revealed that the idea of the proposed centre is a good one. Feedback from participants at various consultation exercises also indicates great appetite for a dispute resolution centre, rather than just mediation. A thorough appraisal of the contributions of different categories of stakeholders suggests that the key functions expected of a centre fall into two categories: awareness raising and promotion of mediation, and secondly quality, regulation and training (CPD) for mediators.

The focus of the research study documented in this report is to deploy an innovative location-allocation modelling technique within the field of Geographic Information Science (GIS) to optimise the choice of the most appropriate site(s) for the mediation centres.

The methodology used here embarks on a simultaneous location of the dispute resolution centres, and the allocation of composite dispersed demand within a geodemographic framework. This also includes consideration for mobility issues in order to optimise objective functions for the centres. The results from the analysis which will enable stakeholders establish: a justification for the appropriateness of the site(s) selected for situating the dispute resolution and training centres; if the locations of the proposed centres are likely to affect their success; and how the location of the proposed centres might affect their success.

1.1. Spatial Analysis for Dispute Resolution – Data Source

In order to develop a proper understanding of the spatial configuration of dispute resolution uptake and supply across Wales, multiple datasets were used in synergy. In order to ensure that the analysis is robust and defensible, genuine effort was made to source data from several providers and databases. A major campaign was launched across Wales by Skills for Justice with support from project stakeholders. This campaign sparked positive interest from numerous Dispute Resolution providers comprising individuals and organisations. In addition to numerous individual providers who responded directly to the Skills for Justice campaign, geo-spatial data capture of dispute resolution providers based in Wales was made possible through collaborative engagement with:

- The Civil Mediation Council
- The Chartered Institute of Arbitrators
- The Legal Aid Agency
- The College of Mediators
- Resolution
- The Law Society

Geo-spatial data relating to users of dispute resolution was quite difficult to garner. Genuine effort was made to source geo-referenced data for users of different types of dispute resolution ranging from commercial to family mediation services. The project team was able to secure a robust dataset from the Legal Aid Agency (LAA) with a list of nearly 2,000 postcodes of clients referred for legal aid services. The dataset covered April to October 2013. The project team did not secure data for other types of mediation despite a very painstaking effort. Therefore, the data used throughout this report as a proxy for demand for mediation services is that of family mediation users.

The third dataset is the preliminary version of a geodemographic classification system popularly called OAC and developed from the 2011 census for all Output Areas (OAs) in England and Wales. This geodemographic system which was developed at the Department of Geography, University College London in collaboration with the Office for National Statistics (ONS) served as the main descriptor of neighbourhood characteristics in this report. OAC is a recognised national statistic.

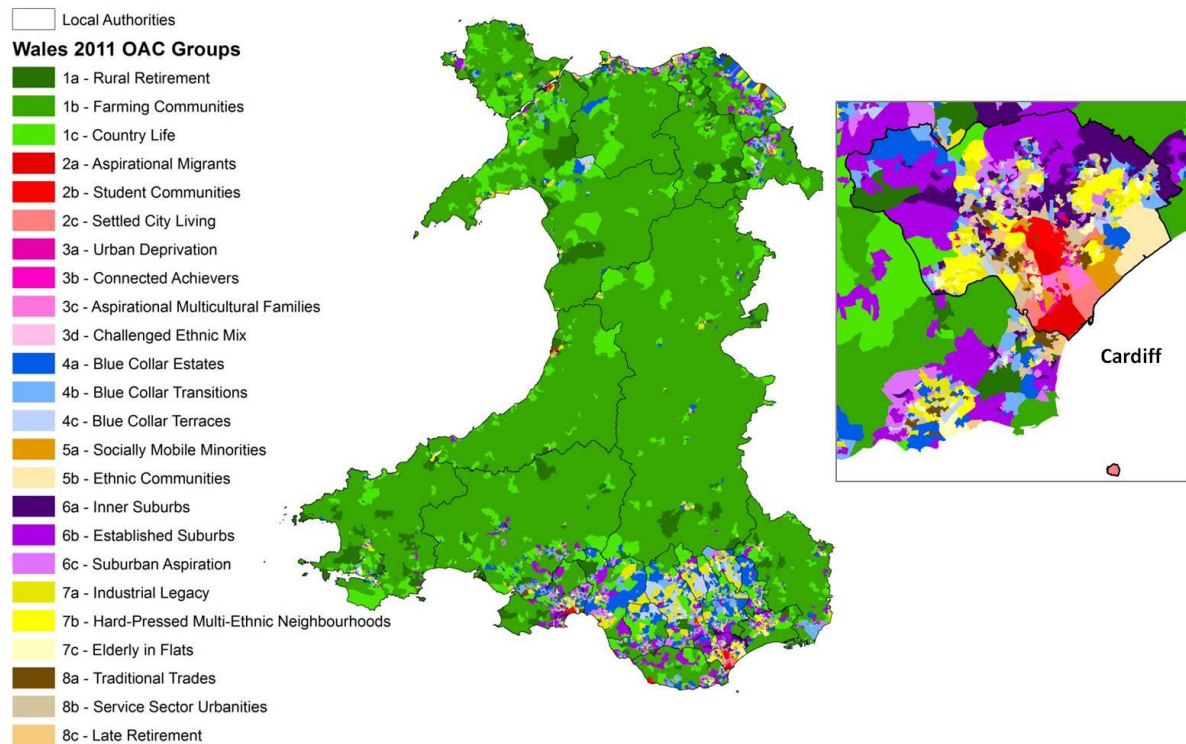
Figure 1.1: Structure of the 2011 ONS Output Area Classification

Super-groups	Groups	Sub-groups
1: Rural Residents	1a: Rural Retirement	1a1: Early Rural Retirement
		1a2: Late Stage Rural Retirement
	1b: Farming Communities	1b1: Agricultural Communities
		1b2: Older Farming Communities
		1b3: Rural Commuters
	1c: Country Life	1c1: Ageing Rural Life
		1c2: Social Rented Rural Housing
		1c3: Young Commuters
2: Cosmopolitans	2a: Aspirational Migrants	2a1: Migrant Commuters
		2a2: Migrant Families
		2a3: Financial Workers
	2b: Student Communities	2b1: Student Communal Living
		2b2: Student Digs
	2c: Settled City Living	2c1: Older Traditional Employment
		2c2: Established EU Service Workers

		2c3: Urban Cultural Mix
3: Ethnic Mix	3a: Urban Deprivation	3a1: Striving Service Workers
		3a2: Ageing Unemployed
	3b: Connected Achievers	3b1: Ageing Workers
		3b2: Multi-Ethnic Workers
		3b3: IT Workers
	3c: Aspirational Multicultural Families	3c1: White-Ethnic Families
		3c2: Multi-Ethnic Families
	3d: Challenged Ethnic Mix	3d1: Bangladeshi Hardship
		3d2: Black Hardship
		3d3: White Hardship
4: Blue Collar Neighbourhoods	4a: Blue Collar Estates	4a1: Multi-Ethnic Estates
		4a2: Secondary Industry Workers
		4a3: Flats and Terraced Living
	4b: Blue Collar Transitions	4b1: Steady Transitions
		4b2: Transitional White Neighbourhoods
		4b3: Multi-Ethnic Industrial Transition
	4c: Blue Collar Terraces	4c1: Senior Blue Collar Terraces
		4c2: Ethnic Blue Collar Terraces
		4c3: Rented Blue Collar Terraces
5: Multicultural Metropolitans	5a: Socially Mobile Minorities	5a1: Achieving Minorities
		5a2: Inner City Ethnic Assimilation
		5a3: Socially Mobile New Arrivals
	5b: Ethnic Communities	5b1: Pakistani Communities
		5b2: Multi-Ethnic Communities
		5b3: White-Ethnic Communities
6: Suburbanites	6a: Inner Suburbs	6a1: Multi-Ethnic Suburbs
		6a2: Young Workers in Terraces
		6a3: Ageing Europeans
	6b: Established Suburbs	6b1: Ageing in Suburbia
		6b2: Young Suburban Family Tenants
		6b3: Suburban Service Workers with Higher Qualifications
	6c: Suburban Aspiration	6c1: Detached Retirement Living
		6c2: Semi-Detached Suburbia
		6c3: Young Families in Detached Houses
7: Hard-Pressed Households	7a: Industrial Legacy	7a1: Young Hard-Pressed Families
		7a2: Old Industrial Workers
		7a3: Asian Communities (3)
	7b: Hard-Pressed Multi-Ethnic Neighbourhoods	7b1: Hard-Pressed Adults with Prospects
		7b2: Hard-Pressed European Settlers
		7b3: Deprived and Isolated Ethnic Minorities
	7c: Elderly in Flats	7c1: Settled Hard-Pressed Pensioners
		7c2: Dependant Hard-Pressed Pensioners
		7c3: Deprived Elderly Communities
8: Urbanites	8a: Traditional Trades	8a1: Achieving Tradespeople
		8a2: Educated Tradespeople
		8a3: Striving Multi-Ethnic Tradespeople
	8b: Service Sector Urbanities	8b1: Ageing Urban Service Workers
		8b2: Young Urban Service Workers
		8b3: Skilled Urban Service Workers
	8c: Late Retirement	8c1: Delayed Retirement
		8c2: Self-Sufficient Retirement
		8c3: Communal Retirement

The OAC groups together small geographic areas according to key characteristics common to the population in that grouping. These groupings are referred to as clusters, and were derived from spatial-statistical manipulation of census data using a technique called cluster analysis to manipulate key census variables. The OAC places each 2011 UK census OAs into one of eight clusters called Supergroups based on the socio-economic attributes of the residents of each area. As shown in Figure 1.1, the eight Supergroups are further subdivided into 24 Groups and these are finally subdivided into 67 Subgroups (ONS, 2013).

Figure 1.1: The Spatial Distribution of OAC Groups in Wales



The analysis in this report is conducted at the hierarchy of OAC Groups. A map of the OAC Groups in Wales is shown in Figure 1.1 with Cardiff inset. The map was produced for the 10,036 OAs in Wales.

Figure 1.2: Wales Adult Population Share by 2011 OAC Groups

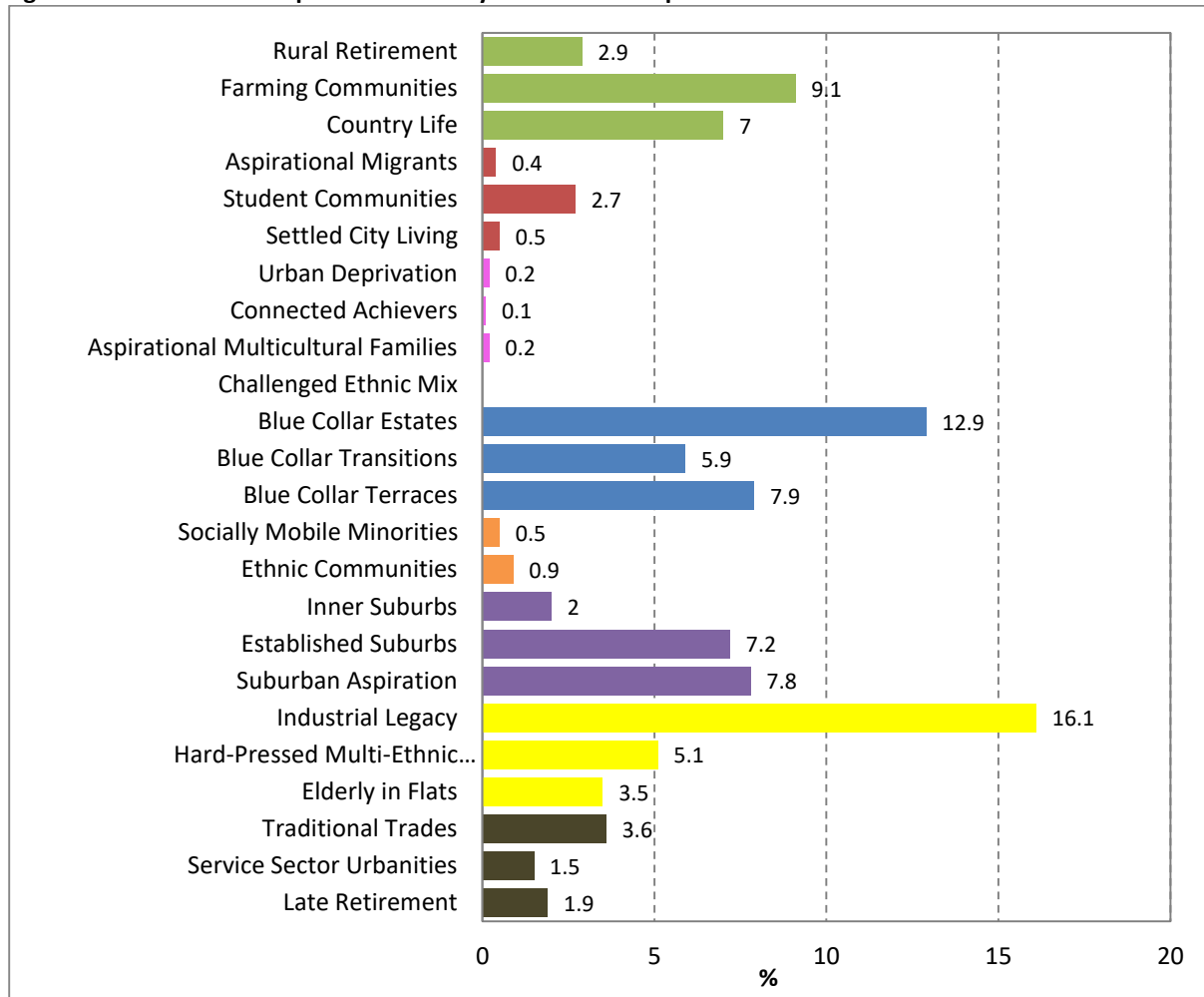


Figure 1.2 shows the percentage share of adult population distribution in Wales by the twenty four geodemographic clusters. Industrial Legacy, Blue Collar estates and Farming Communities account for more than a third of the total population of Wales. Less than 1% of the population fall into the Challenged Ethnic Mix cluster.

1.2. Structure of the Report

The subsequent sections of this report are structured to highlight key findings of the spatial analysis and modelling of the ancillary mediation statistics and further present visual summaries of those data analysed.

The analysis detailed in this report is novel in that it provides the first opportunity of conducting a national assessment of some of the indicators relating to demand and supply of alternative dispute resolution using a more localised geographical scale and a geodemographic approach.

Section two focuses on estimating the relative likelihood for adults to use mediation services based on the geodemographic characteristics of the residential neighbourhoods. Estimated demand indices are also mapped for more than ten thousand small neighbourhoods across the country.

In the **third section of the report**, variations in the distribution of provision of mediation services is analysed and some metrics of spatial inequality in supply are computed and discussed. Visual analytics are also used to compare the spatial density of predicted demand for mediation to the actual level of supply.

Section four presents a detailed multi-criteria analysis using a location-allocation modelling technique to situate probable sites for the dispute resolution centres such that they are able to supply the likely points of demand in a very efficient manner.

The report concludes in **section five** by providing a robust summary and implications of the research study.

2. Variations in Demand for Mediation Services

There is evidence of an increase in the use of dispute resolution practitioners in Wales and the rest of the UK. Mediation and other related processes have also been introduced into a number of legal and quasi legal jurisdictions. However, little is known about the spatial intensity of demand for dispute resolution services across Wales. This knowledge is a crucial decision support mechanism when trying to situate service centres that will be useful for dispute resolution users.

Quantifying the level of demand for mediation services across geographical space in Wales is not a straightforward task. One of the reasons for this is that there are different types of mediation services. Mediation for family disputes is the preferred type of mediation when a disagreement involves immediate or extended members of a family. This sort of mediation can be particularly beneficial in scenarios where the relationship between the parties is likely to continue beyond the resolution of the dispute.

Other types of mediation services fall broadly under the civil mediation. These could include for instance the resolution of housing issues, business disputes, small claims, debt claims, boundary disputes, employment disputes, contractual disputes, personal injury and negligence claims, and community disputes such as nuisance or harassment issues.

2.1. Neighbourhood Differences in Demand For Mediation Services

Due to the fact that there are individual and organisational providers of mediation services, data relating to the level of usage is not often centrally stored. For this study, the data used as a proxy for demand for mediation services was a record of persons who had been referred to the LAA for legal aid service within the context of a resolving a family dispute. Anonymised postcode data was made available for the period April to October 2013.

The dataset was carefully cleaned and geo-coded within the GIS. A total of 1755 records were successfully geo-coded. All the geo-coded postcodes were subsequently linked to their corresponding geodemographic typologies to allow for further profiling.

Index values calculated for each geodemographic using Equation 1 such that an index score of 100 indicates a level of occurrence of demand for mediation services equal to the **national mean or expected level**. An area with an index of 150 would indicate a level 50% above the national average and a score of 200 twice the expected rate (Harris et al., 2005).

$$I = \left[\frac{n / \sum_1^k n}{N / \sum_1^k N} \right] \times 100 \quad (1)$$

where:

I is the index

n is the count of people referred to the LAA for legal aid service in geodemographic cluster k

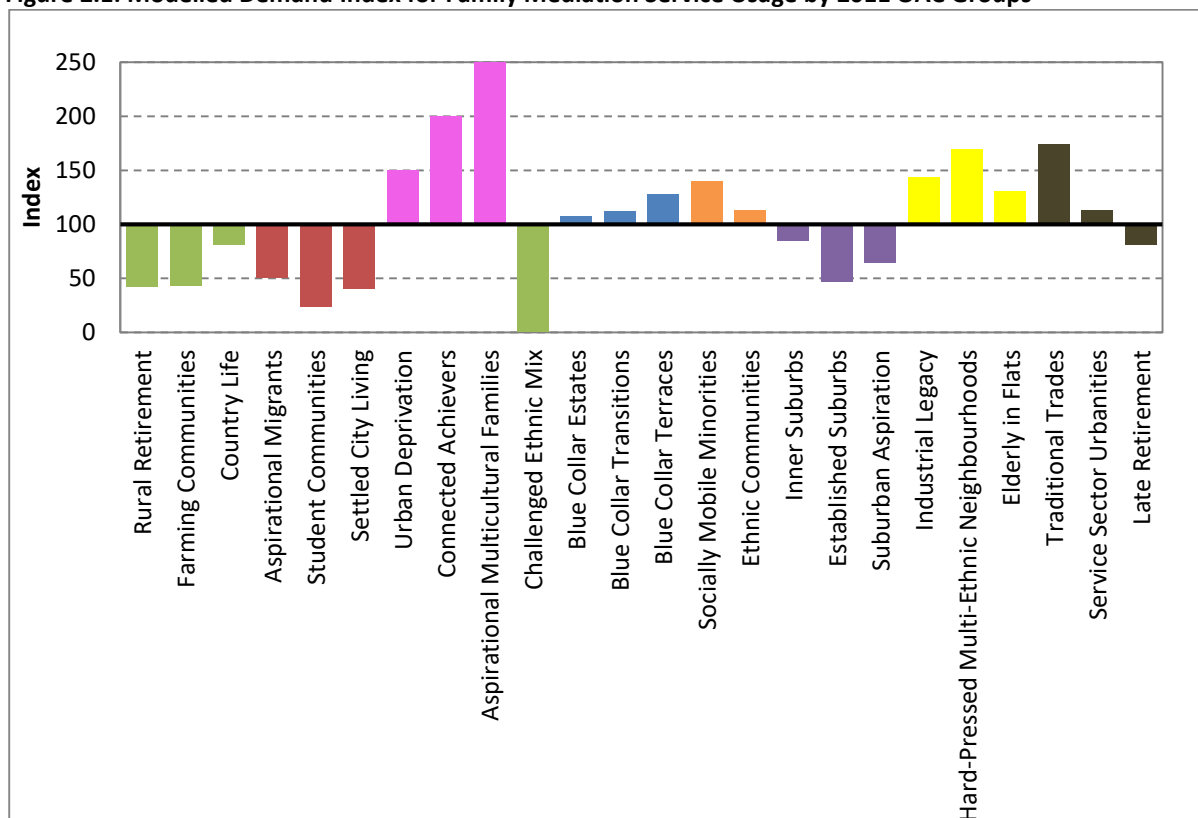
k is the total number of geodemographic clusters

N is the count of adult population in geodemographic cluster k

Table 2.1: Relative Likelihood Index for Adults to Use Family Mediation Services by 2011 OAC Groups

Group Codes	Group Labels	Index
1a	Rural Retirement	42
1b	Farming Communities	43
1c	Country Life	81
2a	Aspirational Migrants	50
2b	Student Communities	23
2c	Settled City Living	40
3a	Urban Deprivation	150
3b	Connected Achievers	200
3c	Aspirational Multicultural Families	250
3d	Challenged Ethnic Mix	0
4a	Blue Collar Estates	108
4b	Blue Collar Transitions	112
4c	Blue Collar Terraces	128
5a	Socially Mobile Minorities	140
5b	Ethnic Communities	113
6a	Inner Suburbs	85
6b	Established Suburbs	47
6c	Suburban Aspiration	64
7a	Industrial Legacy	144
7b	Hard-Pressed Multi-Ethnic Neighbourhoods	170
7c	Elderly in Flats	131
8a	Traditional Trades	175
8b	Service Sector Urbanities	113
8c	Late Retirement	81

Figure 2.1: Modelled Demand Index for Family Mediation Service Usage by 2011 OAC Groups

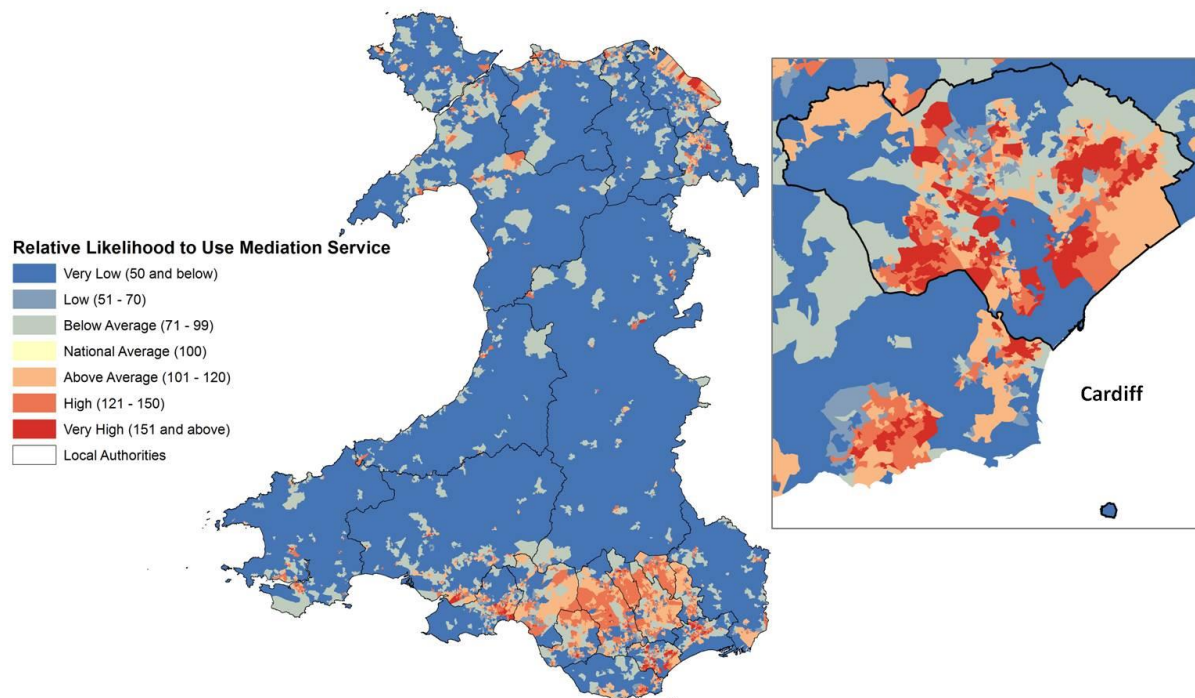


The evidence presented in Figure 2.1 and Figure 2.1 show results for a comparative model which relates the rates of persons referred for legal aid service within a family mediation context to the adult population rates in each geodemographic typology. The demand indices generated indicate that Aspirational Multicultural Families are probably likely to be more disposed towards referral for family mediation. Adults within this neighbourhood type are likely to use mediation services at more than double the national average rate for Wales.

Residents of Aspirational Multicultural Families are likely to live in semi-detached or terraced houses, although living in detached houses will not be uncommon. It is most likely they will be social rented, although some will be privately rented. These types of neighbourhoods also comprise below average number of residents born in EU countries. Residents are likely to have medium to low level qualifications and most likely be employed in the primary or secondary industries and use private transport to get to work.

Another typology with about double the national average level of usage is the Connected Achievers Group. These neighbourhoods are characterised by an above average number of young adults. They are likely to live in semi-detached or terraced houses that they own or rent privately. The ethnicity of the group reflects an above average of residents born in EU countries. Residents are likely to have high levels of qualifications and most likely be employed full-time in the tertiary sector and use public transport to get to work.

Figure 2.2: Modelled Relative Likelihood for Adults to Use Mediation Services



The spatial distribution of modelled likelihood for adults to use mediation services is shown in Figure 2.2. The map suggests that vast areas in South Wales are likely to contain adults that are highly prone to mediation usage.

Two other neighbourhood types – *Traditional Trades* and *Hard-Pressed Multi-Ethnic Neighbourhoods* also exhibit very high disposition towards mediation usage.

The residential population of Traditional Trades neighbourhoods is likely to be characterised by younger persons, with residents over the retirement age unlikely. The ethnicity of the group is mixed, but it is most likely residents will be white. Residents are most likely to live in rented or owned terraced housing that may not have central heating. Individuals are less likely to have higher-level qualifications, and levels of unemployment for the group are significant. Residents who are employed are most likely to work in the primary or secondary sectors, and most likely to walk, cycle or use an alternative to standard public or private transport to get to work.

Adults within Hard-Pressed Multi-Ethnic Neighbourhoods generally have an above average number of children aged 16 over and in full-time education. Residents also have an increased possibility of being unemployed, but those who are employed are likely to be in the secondary or tertiary sectors and use public transport to get to work.

3. Distribution, Inequalities and Gaps in the Supply of Mediation Services

The task of ensuring equity in access to legal services is a vital obligation for the Welsh government. The stipulations enshrined in the Human Rights Act make this even more pertinent. In a mixed economy of legal advice provision, the focus of contemporary policy debate is therefore often directed towards the provision of services which meet peoples' needs, provides choice, access, and are appropriate to dealing with clients' problems as they present themselves in daily life.

Mediation is not just a process; it is a set of skills and an approach to problem solving. Whilst it is often easier for established legal outfits to integrate the provision of mediation services within their offerings, in-house mediation services can prove difficult to establish, build and develop.

It is also worth mentioning that there are currently no nationally recognised standards for mediation, nor does any mediation training currently sit on the Qualifications Curriculum Authority. There are a number of accredited mediation training courses, which may be accredited by the Institute of Leadership and Management (ILM); Oxford, Cambridge and RSA Examinations (OCR) and the Open College Network (OCN). This also plays a role in the supply of mediation services.

3.1. Spatial Density of Supply of Mediation Services

As noted earlier, there are individual and organisational providers of mediation services in Wales and it is impossible to secure data on their locations from a single source. For this study, information regarding the provision of mediation services was derived from multiple sources. With the assistance of the project steering group and a number of organisations, a database was developed comprising a wide range of individuals and organisations. The collation of this database was made possible through collaborative engagement with:

- The Civil Mediation Council
- The Chartered Institute of Arbitrators
- The Legal Aid Agency
- The College of Mediators
- Resolution
- The Law Society

The dataset was carefully cleaned and geo-coded within the GIS. A total of 394 unique records were successfully geo-coded. All the geo-coded postcodes were subsequently linked to their corresponding geodemographic typologies to allow for further profiling.

Figure 3.1: Spatial Distribution of Mediation Service Providers

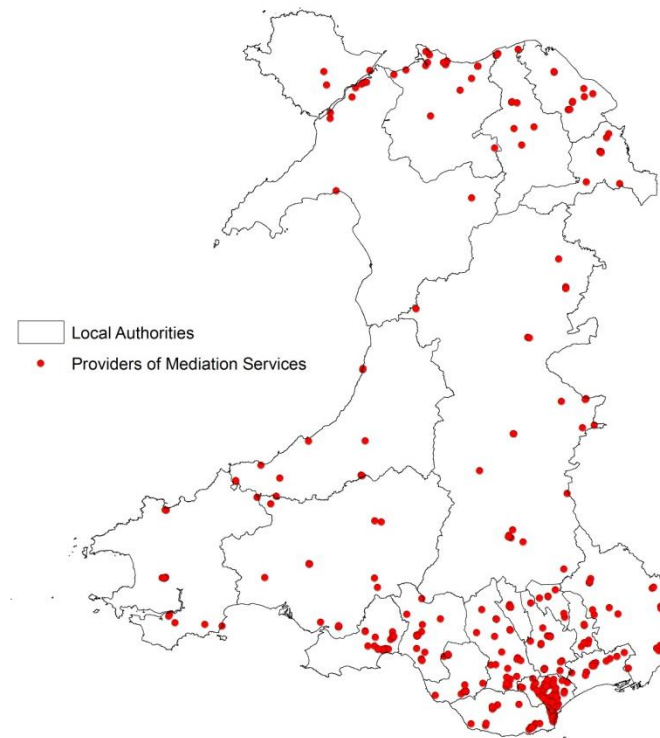


Figure 3.1 shows the spatial distribution of the dispute resolution providers collated in the database. Some of the Local Authorities where mediation providers are disproportionately located include:

- Cardiff
- Rhondda Cynon Taf
- The Vale of Glamorgan
- Newport
- Bridgend
- Swansea
- Neath Port Talbot
- Powys (*South of this Local Authority)
- Caerphilly
- Wrexham
- Pembrokeshire

A non-parametric model - Kernel Density Estimation (KDE) was used to calibrate the density of the point features. Spatial Social Sciences applications of KDE are based on spatially extensive variables such as socio-economic data. The technique is often used to measure Spatial Accessibility (SA) to services by comparing the densities of supply and demand in a given area in order to detect uneven distributions of services.

Figure 3.2: Spatial Density of Supply of Mediation Services

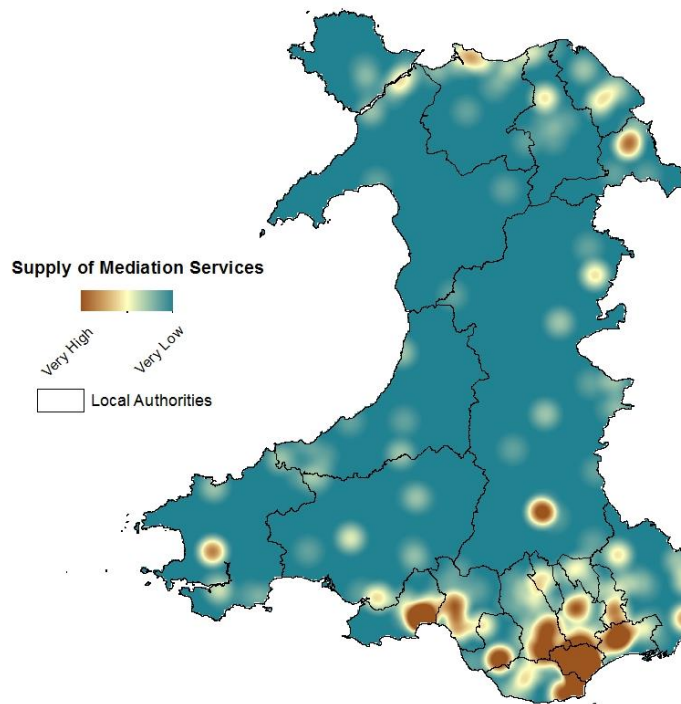


Figure 3.2 shows the spatial density of mediation supply. The graphic reveals marked concentration of hot-spots.

3.2. Demand-Supply Inequalities and Gaps

The evidence presented in Figure 3.1 show results for a comparative analysis of mediation service providers by the neighbourhood types in which they are located. Together, Traditional Trades and Late Retirement account for roughly one-quarter of these providers.

Table 3.1: Comparative Distribution of Mediation Service Providers by 2011 OAC Groups

Group Codes	Group Labels	Share of Mediation Service Providers (%)	Adult Population Penetration (Providers per 1000 adults)
1a	Rural Retirement	2.3	0.12
1b	Farming Communities	7.9	0.13
1c	Country Life	5.6	0.12
2a	Aspirational Migrants	6.6	2.56
2b	Student Communities	4.8	0.24
2c	Settled City Living	2.5	0.79
3a	Urban Deprivation	0.5	0.4
3b	Connected Achievers	0.3	0.33
3c	Aspirational Multicultural Families	1	0.72
3d	Challenged Ethnic Mix	0	0
4a	Blue Collar Estates	5.6	0.07
4b	Blue Collar Transitions	5.3	0.14
4c	Blue Collar Terraces	2.8	0.06
5a	Socially Mobile Minorities	0.5	0.17
5b	Ethnic Communities	0.3	0.05
6a	Inner Suburbs	2.8	0.22
6b	Established Suburbs	7.4	0.16
6c	Suburban Aspiration	2.8	0.05
7a	Industrial Legacy	4.3	0.04
7b	Hard-Pressed Multi-Ethnic Neighbourhoods	3	0.1
7c	Elderly in Flats	5.8	0.25
8a	Traditional Trades	14.7	0.65
8b	Service Sector Urbanities	2.8	0.29
8c	Late Retirement	10.4	0.8

Traditional Trades communities are highly likely to be characterised by younger population groups, with residents over the retirement age unlikely. The ethnicity of this neighbourhood type is mixed, but it is most likely residents will be white. Residents are most likely to live in rented or owned terraced housing that may not have central heating. Individuals are less likely to have higher-level qualifications. Residents who are employed are most likely to work in the primary or secondary sectors, and most likely to walk, cycle or use an alternative to standard public or private transport to get to work. This description mirrors earlier descriptions (in Section 2) of some of the communities that are highly likely to demand for mediation services.

Late Retirement communities on the other hand is likely to have an older demographic, with residents over the retirement age the most likely. The ethnicity diversity of the group is low; with an increased likelihood residents will be white. Residents are most likely to live in flats that they either own or rent, and these likely form parts of communal establishments. Residents are more likely to be in poorer health, with an increased possibility of individuals providing unpaid care. Residents who are in employment are most likely to work in the hospitality sector. They are most likely to walk, cycle or use an alternative to standard public or private transport to get to their place of employment. Residents have an increased likelihood of having a second address elsewhere.

Figure 3.1 also shows the providers per adult population. The striking finding from the analysis presented is that relative to the adult population, there is a disproportionate concentration of mediation providers within Aspirational Migrants neighbourhood typology. For every 1000 adult residents of this neighbourhood type, there are more than two mediation service providers. The population of Aspirational Migrants neighbourhoods is most likely to be young ethnically diverse adults. Households are less likely to contain school age children, or speak English or Welsh as their main language. They are likely to live in flats that they most probably rent privately. Residents are more likely to have higher-level qualifications and be employed full-time in the tertiary sector and use public transport to get to work.

Table 3.2 shows the cumulative percentages of percentages of providers (x_i) and adult population (y_i). The concentration index (**CI**) has been used to illustrate the proportion of inequality in the distribution of providers in relation to the adult population. The **CI** is algebraically defined in Equation 2 as:

$$CI = \frac{1}{2} \sum |X_i - Y_i| \quad (2)$$

where:

CI is the index of concentration

x_i is the proportion of mediation providers in geodemographic cluster i

y_i is the proportion of adults in geodemographic cluster i

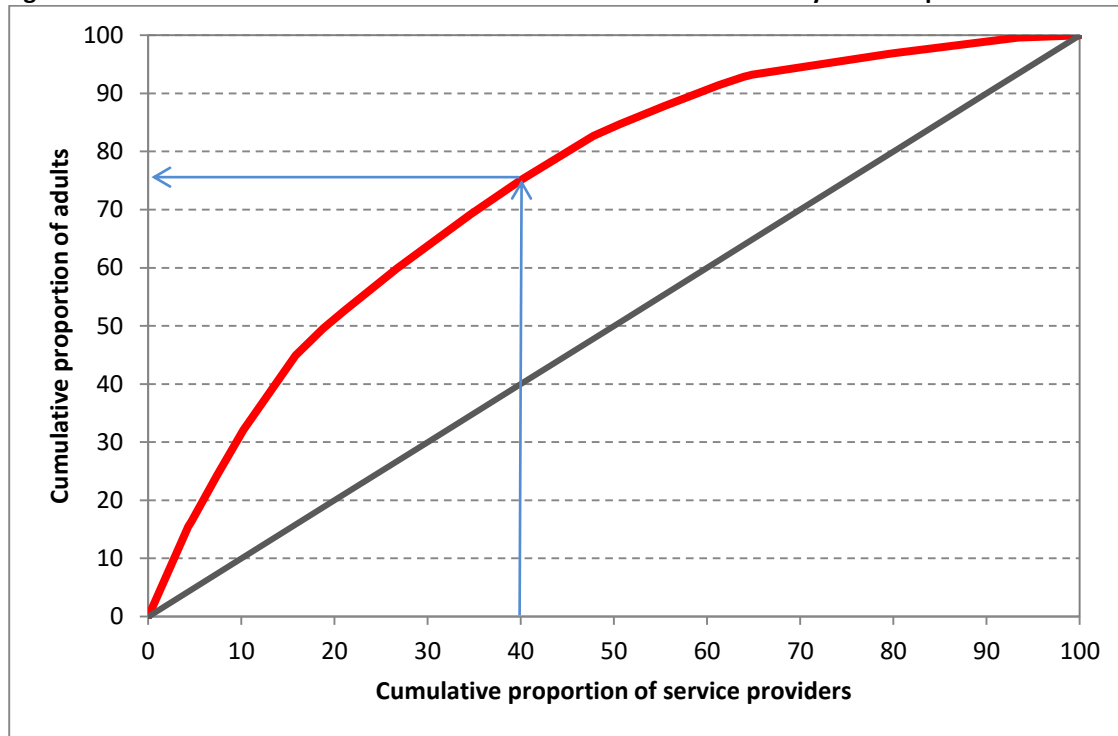
Table 3.2: Computation of Index of Concentration of Mediation Providers by 2011 OAC Groups

Group Codes	Group Labels	Adult Population Penetration (Providers per 1000 adults)	x_i	y_i	$ x_i - y_i $	Cumulative (x_i)	Cumulative (y_i)
3d	Challenged Ethnic Mix	0	0	0	0	0	0
7a	Industrial Legacy	0.04	4.3	15.5	11.2	4.3	15.5
5b	Ethnic Communities	0.05	0.3	0.8	0.5	4.6	16.3
6c	Suburban Aspiration	0.05	2.8	8	5.2	7.4	24.3
4c	Blue Collar Terraces	0.06	2.8	7.8	5	10.2	32.1
4a	Blue Collar Estates	0.07	5.6	12.8	7.2	15.8	44.9
7b	Hard-Pressed Multi-Ethnic Neighbourhoods	0.1	3	4.7	1.7	18.8	49.6
1a	Rural Retirement	0.12	2.3	3.1	0.8	21.1	52.7
1c	Country Life	0.12	5.6	7.2	1.6	26.7	59.9
1b	Farming Communities	0.13	7.9	9.3	1.4	34.6	69.2
4b	Blue Collar Transitions	0.14	5.3	5.8	0.5	39.9	75
6b	Established Suburbs	0.16	7.4	7.2	0.2	47.3	82.2
5a	Socially Mobile Minorities	0.17	0.5	0.5	0	47.8	82.7
6a	Inner Suburbs	0.22	2.8	2	0.8	50.6	84.7
2b	Student Communities	0.24	4.8	3.1	1.7	55.4	87.8
7c	Elderly in Flats	0.25	5.8	3.6	2.2	61.2	91.4
8b	Service Sector Urbanities	0.29	2.8	1.5	1.3	64	92.9
3b	Connected Achievers	0.33	0.3	0.1	0.2	64.3	93
3a	Urban Deprivation	0.4	0.5	0.2	0.3	64.8	93.2
8a	Traditional Trades	0.65	14.7	3.6	11.1	79.5	96.8
3c	Aspirational Multicultural Families	0.72	1	0.2	0.8	80.5	97
2c	Settled City Living	0.79	2.5	0.5	2	83	97.5
8c	Late Retirement	0.8	10.4	2.1	8.3	93.4	99.6
2a	Aspirational Migrants	2.56	6.6	0.4	6.2	100	100

A **CI** equal to zero would signify equilibrium in the system – a scenario whereby the proportion of adults in each neighbourhood type had a corresponding proportional share of mediation service providers. A **CI** equal to 100 would indicate complete inequality – a scenario where all of the mediation service providers are situated in just one neighbourhood type.

The results from the analysis yielded a **CI** of 35.1 suggesting that 35.1% of mediation service providers would need to be redistributed across different neighbourhood types in order to produce an exact correspondence between mediation service providers and adult population.

Figure 3.3: Concentration Curve of Mediation Service Providers Ranked by Adult Population Penetration

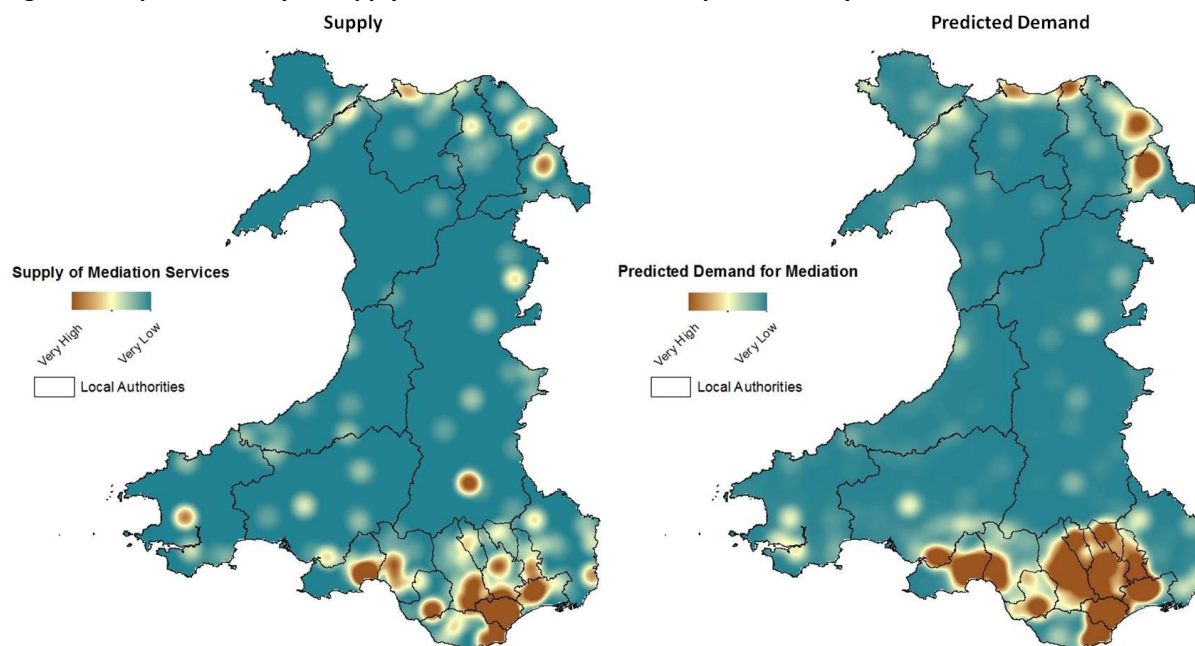


Further analysis of the data in the Figure is summarised in Figure 3.3 which is a concentration curve. The concentration curve is plotted in a similar way to the Lorenz curve and is based on the cumulative proportions of mediation service providers and adult populations in the last two columns of the Figure. The geodemographic clusters have been arranged in ascending order of the adult penetration rates per 1000 adults. When the cumulative proportions are observed, one can immediately deduce the striking revelation that that around 40% of mediation providers are situated within the neighbourhoods of three-quarters of all adults in Wales.

An explanation for these disparities may be provided by juxtaposing the density map for mediation service providers alongside a corresponding density map of predicted demand for mediation services. In Section 2, predicted mediation demand indices were generated for all the Output Areas in Wales. These indices were used to create a density surface using the KDE methodology used to create the density of supply of mediation services earlier in Figure 3.2.

Figure 3.4 shows the spatial density surface of supply of mediation services and that of predicted demand. Both maps show very similar patterns in terms of hot and cold spots. This suggests that providers of mediation services are generally dispersed within the vicinities of service users. This explains some of the neighbourhood disparities in supply of mediation services and makes logical sense. It also helps to validate the predictive model used to calibrate demand for services. However, what is also observable from the two maps is that there is still room for increased supply coverage relative to the demand heat.

Figure 3.4: Spatial Density of Supply of Mediation Services vs. Spatial Density of Predicted Demand



Demand supply gaps have also been illustrated for each Local Authority in Wales in Appendices 1 to 22. The maps show the exact location of different service providers overlaid on the predicted demand indices for OAs in each Local Authority.

4. Choosing Optimal Locations for Dispute Resolution Centres

Location is an important factor that often influences the success or failure of public or private services. A poor location decision can be difficult and expensive to overcome. Both private and public sector organisations can profit from a good location. The choice of a good location can mean for instance that high quality public services can be delivered to the community in a cost-effective manner.

There is much to consider when deciding on the location of a business or service. The parameters for consideration would depend on the function expected of the site and the availability of required data for quantifying the assumptions and expectations of the site.

The goal of this section is to use a location-allocation modelling technique to locate sites probable sites for the dispute resolution centres such that they are able to supply the likely points of demand in a very efficient manner. The modelling approach is two-fold:

- The simultaneous location of sites for the centres; and
- The dispersal of likely demand to each of the chosen centres.

The remainder of this section detail the model parameters, assumption and results of the analysis.

4.1. Model Parameters, Assumptions and Data

Within this spatial modelling context, location indicates the process of identifying optimum sites for the proposed centres given a set of objectives related for instance to accessibility. The term allocation on the other hand represents the process of identifying specific neighbourhoods and mediation service providers surrounding the centres that should serve the centres concerning the in- or outflow of people. This is generally known as demand.

Road Network

It is assumed that people will generally travel to the proposed centres by road. Therefore, digital road network data for Wales was used. The assumption is that people will travel via A, B, and minor roads. Figure 4.1 shows the separate road networks whilst the combination of the three road networks is shown in Figure 4.2. The network shown in Figure 4.2 was used in the modelling process.

Figure 4.1: A, B and Minor Roads in Wales

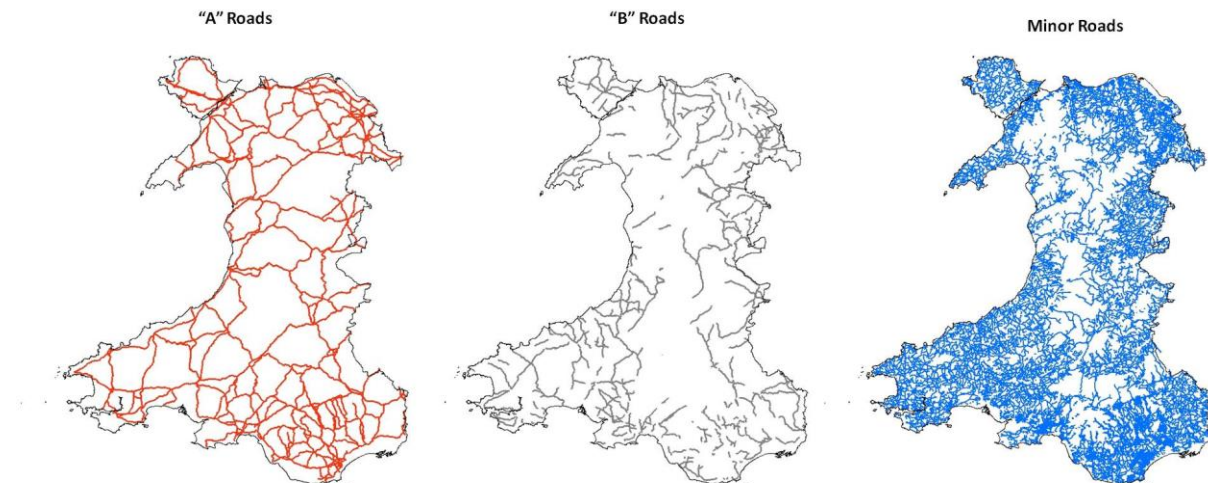
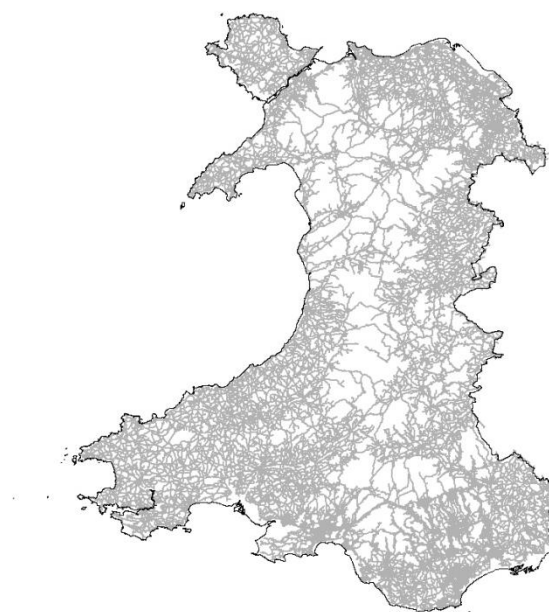


Figure 4.2: Combined Network of A, B and Minor Roads in Wales



Impedance

The framing of a location-allocation model entails network analysis. During the network analysis process, an important goal is often to minimise a “cost” during the calculation of the possible path of travel from demand points for instance. This cost is also known as impedance. Our model assumed that those who would visit the centres would prefer to travel via the shortest possible route. Therefore their aim would be to minimise the distance covered. Distance was therefore used as the impedance parameter in the analysis.

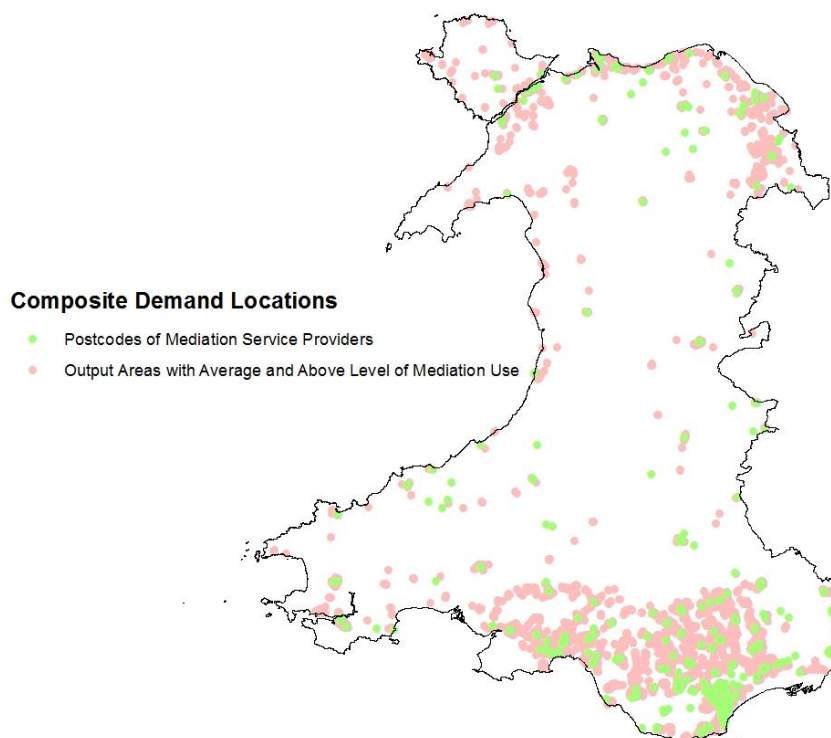
Across the United Kingdom, the average trip length has increased by 9% from 6.4 miles in 1995/97 to 7.0 miles in 2012 (DfT, 2013). We therefore assumed that users of these centres may not want to travel beyond **7 miles**. This is of course a relative value. Some users may commit to doing longer distances. However, we believe that it makes logical sense to use the national bench-mark.

Composite Demand

The proposed dispute resolution centres are expected to provide a wide range of functions for mediators, training providers and those seeking meditation services. This implies that the centres will be used largely by two groups of people - mediation providers and people seeking mediation services. These two *demands* have been analysed and described in earlier sections of this report.

In Section 2, the relative likelihood for adults to use mediation services was modelled for the 10,036 Output Areas in Wales. All Output Areas received a weight (the likelihood index for which the Welsh national average is 100). Section 3 on the other hand identified the spatial distribution of 394 mediation service providers (Figure 3.1). Each provider was given the same weight equal to the national average of 100.

Figure 4.3: Spatial Distribution of Composite Demand Locations



A composite of demand locations for the proposed mediation centres was created by combining the both sets of data (i.e. the Output Areas with an above average or national average level of mediation usage and the postcodes of service providers) to give a combined total of 6,368 possible weighted demand points. Figure 4.3 shows the spatial distribution of the composite demand points.

Candidate Locations

The next parameter in the model specification is the set of locations from which a sub-set of optimal sites would be chosen. It was decided that in the spirit of equity, every Ward in Wales should be given an equal opportunity of being selected as potential sites for dispute resolution centres having simultaneously considered the road network, factors of attractiveness and impedance.

Figure 4.4: Spatial Distribution of Candidate Locations

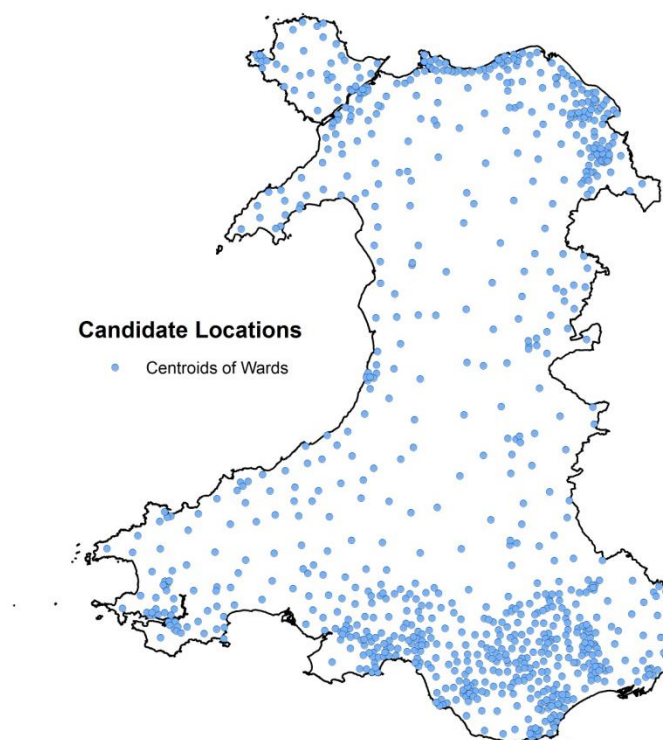


Figure 4.4 shows the spatial distribution of the centroids of all the 881 Wards in Wales. These are the candidate locations.

4.2. Model Computation and Results

There are six primary problem types in the discipline of discrete location theory. These include:

- Minimise impedance problem type
- Maximise coverage problem type
- Minimise facilities problem type
- Maximise attendance problem type
- Maximise market share problem type
- Target market share problem type

These problems (often described as location-allocation problems) decide the location of potential sites for situating services or facilities and allocate demand points to one or more of the sites. The problem type that this research study seeks to solve is the **maximise attendance** problem type. This problem type helps to choose potential sites for the mediation centres such that as much demand weight as possible is allocated to the sites while assuming the demand weight decreases in relation to the distance between the site and the demand points. One of the assumptions here is that distance may create some frictional effects on the attractiveness of sites to potential users. The maximise attendance problem type used here therefore assumes that the farther people have to travel to reach the mediation centres, the less likely they are to use it.

For the purpose of this analysis, the aim was to select a sub-set of 10 Wards from all the 881 Wards in Wales. After deploying the algorithm the following Wards were selected as optimal locations for the Mediation Centres:

Figure 4.1: Ten Optimal Locations and their Corresponding Local Authorities

Wards	Local Authority
Cathays	Cardiff
Stow Hill	Newport
Cwmbwrla	Swansea
Cefn Fforest	Caerphilly
Offa	Wrexham
Rhondda	Rhondda Cynon Taf
Neath East	Neath Port Talbot
Buttrills	The Vale of Glamorgan
Bigyn	Carmarthenshire
Twyn Carno	Caerphilly

Figure 4.1 shows the list of ten Wards selected. Nine of the wards are located in South Wales. Only one of them (Offa) is situated in the northern half of the country.

Figure 4.5: Optimal Location in Cardiff

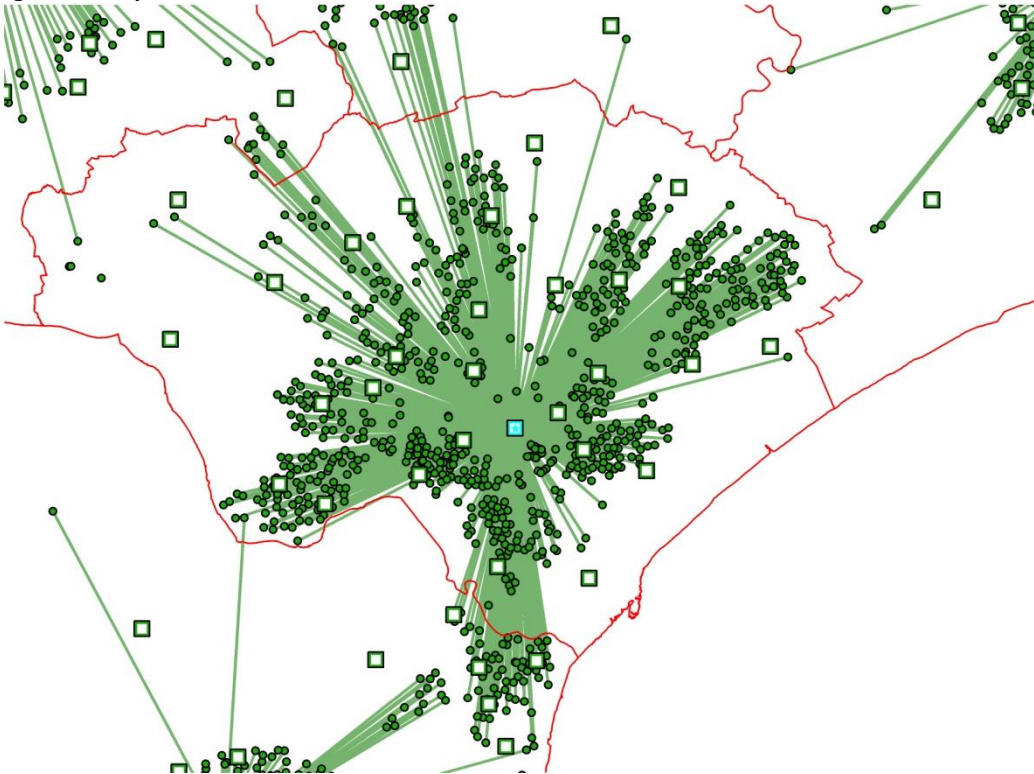


Figure 4.6: Optimal Location in Newport

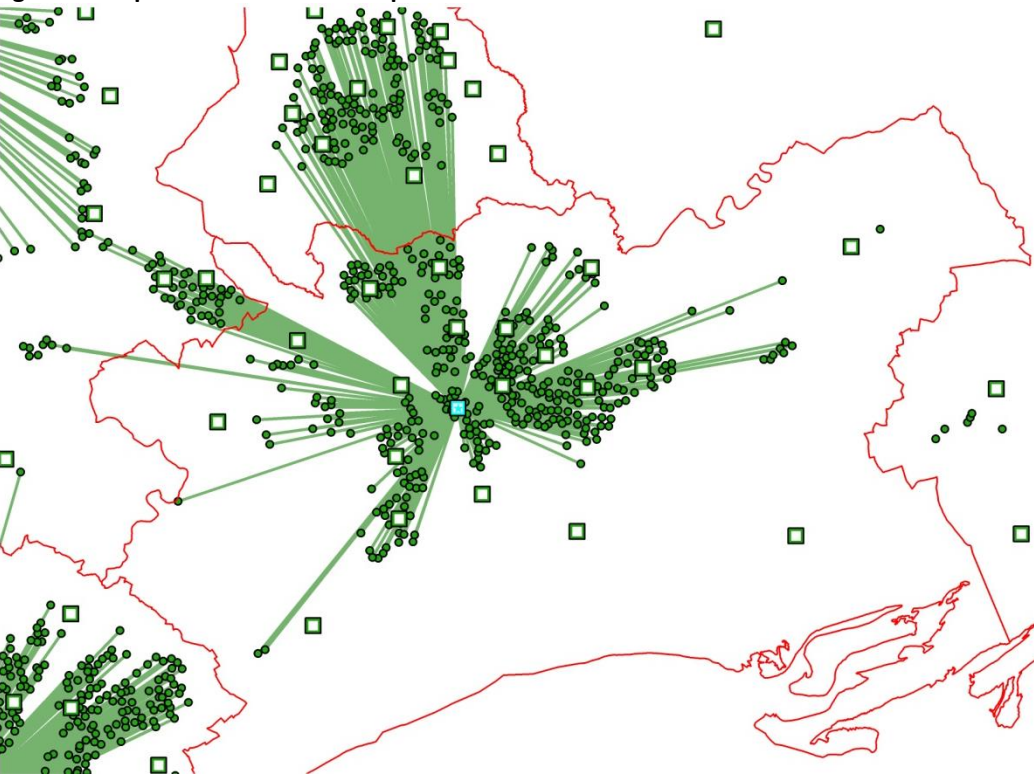


Figure 4.7: Optimal Location in Swansea



Figure 4.8: First Optimal Location in Caerphilly

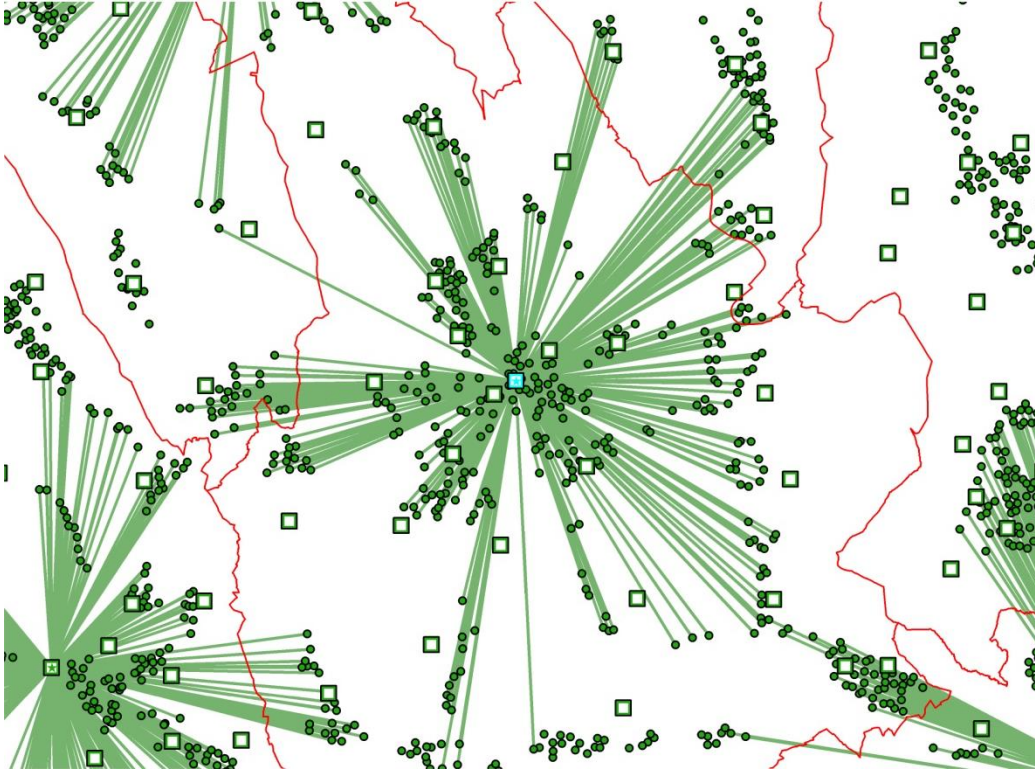


Figure 4.9: Optimal Location in Wrexham

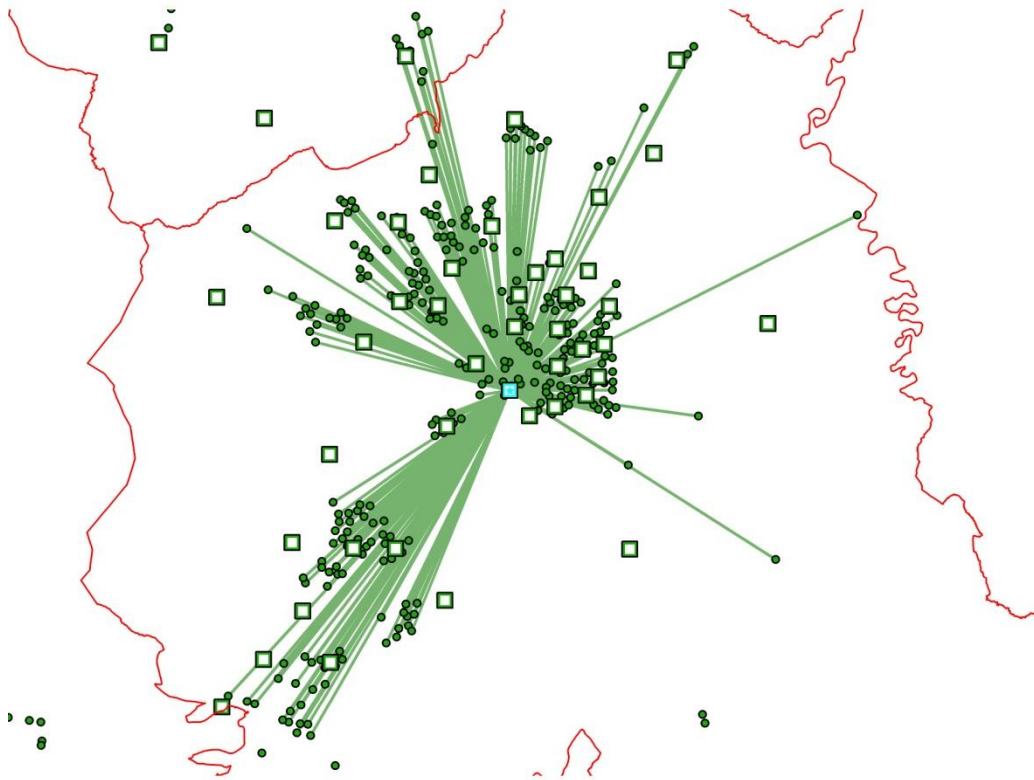


Figure 4.10: Optimal Location in Rhondda Cynon Taf

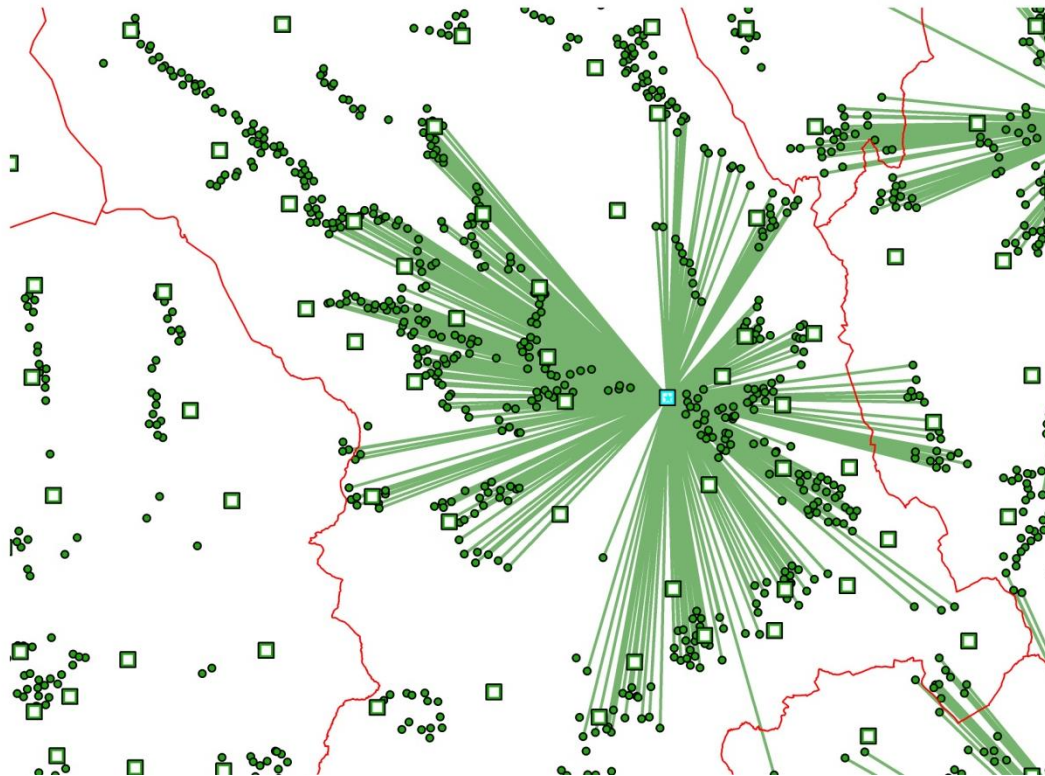


Figure 4.11: Optimal Location in Neath Port Talbot

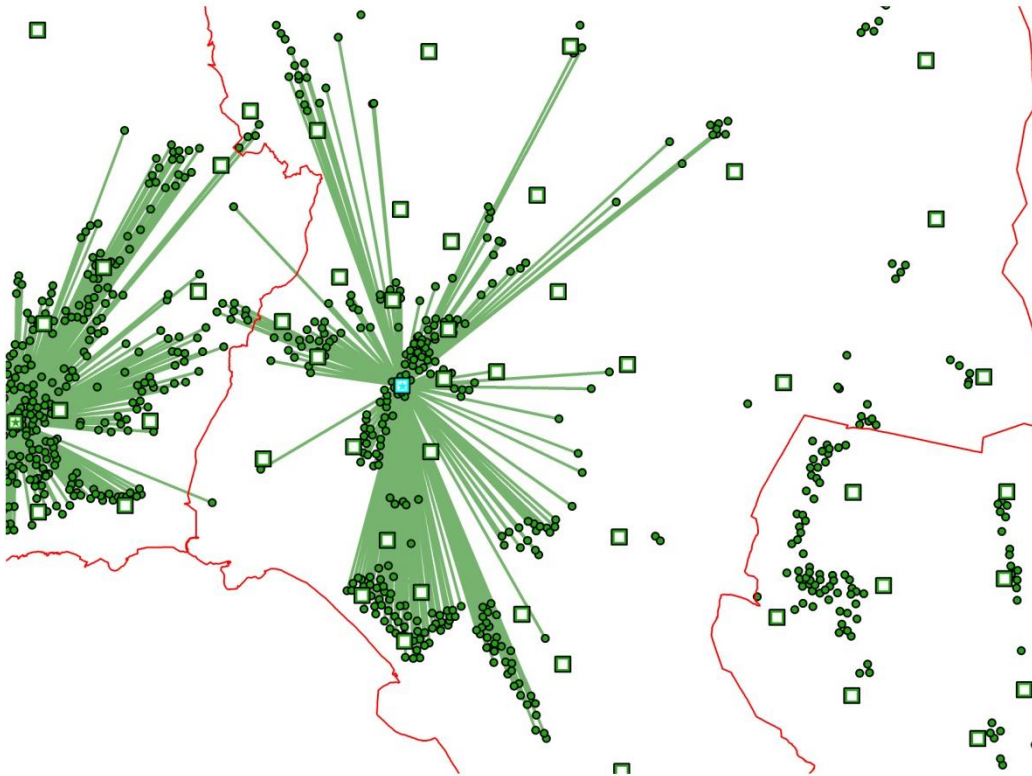


Figure 4.12: Optimal Location in the Vale of Glamorgan

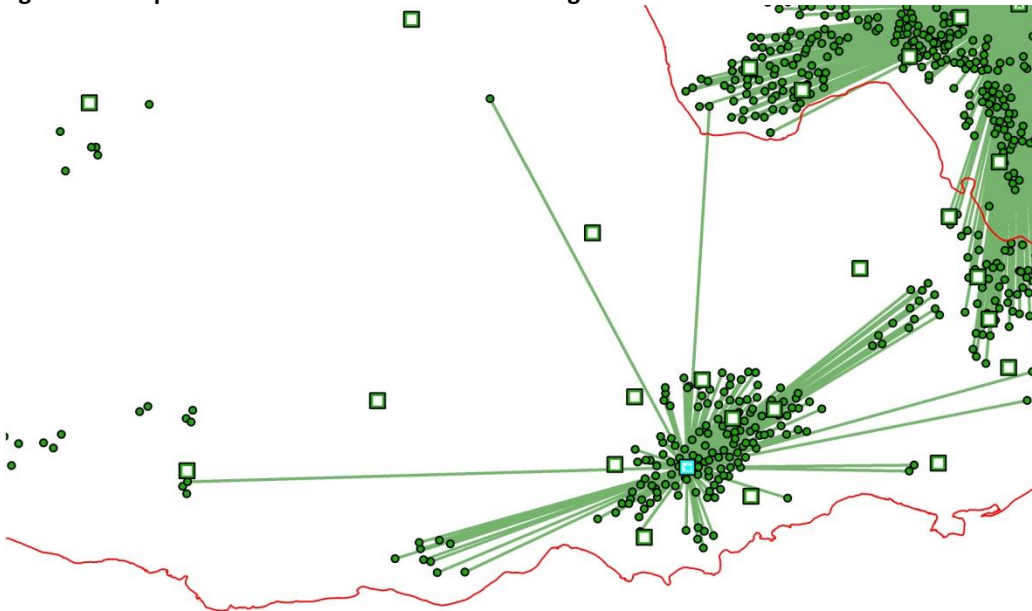


Figure 4.13: Optimal Location in Carmarthenshire

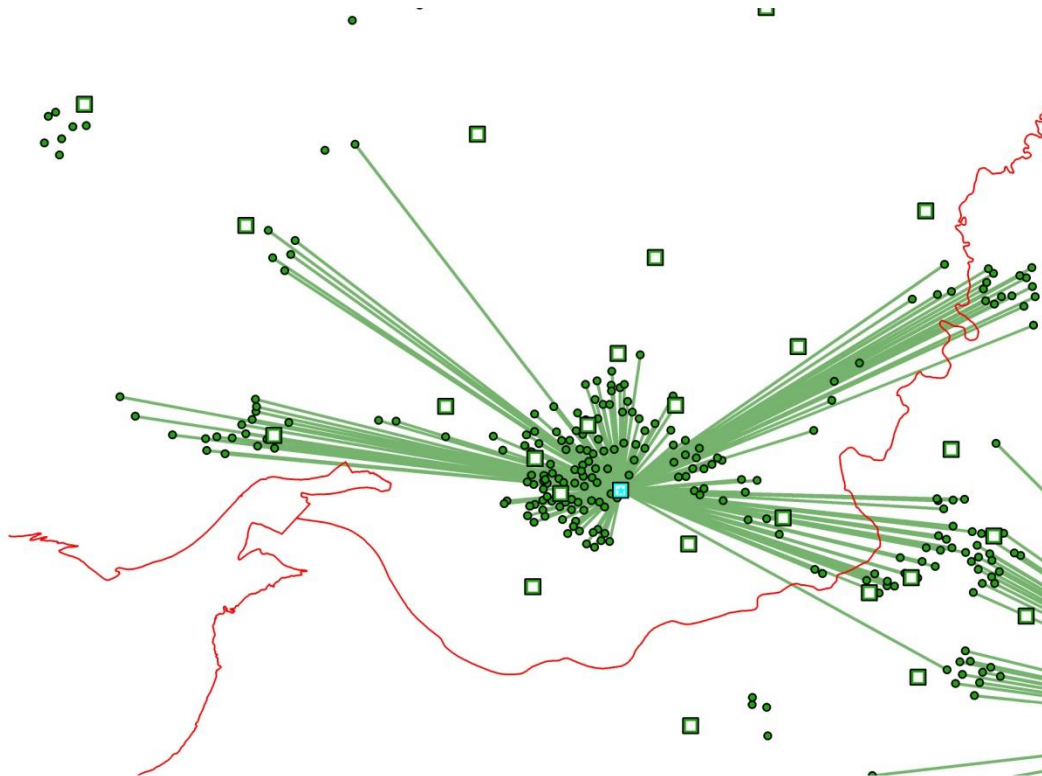
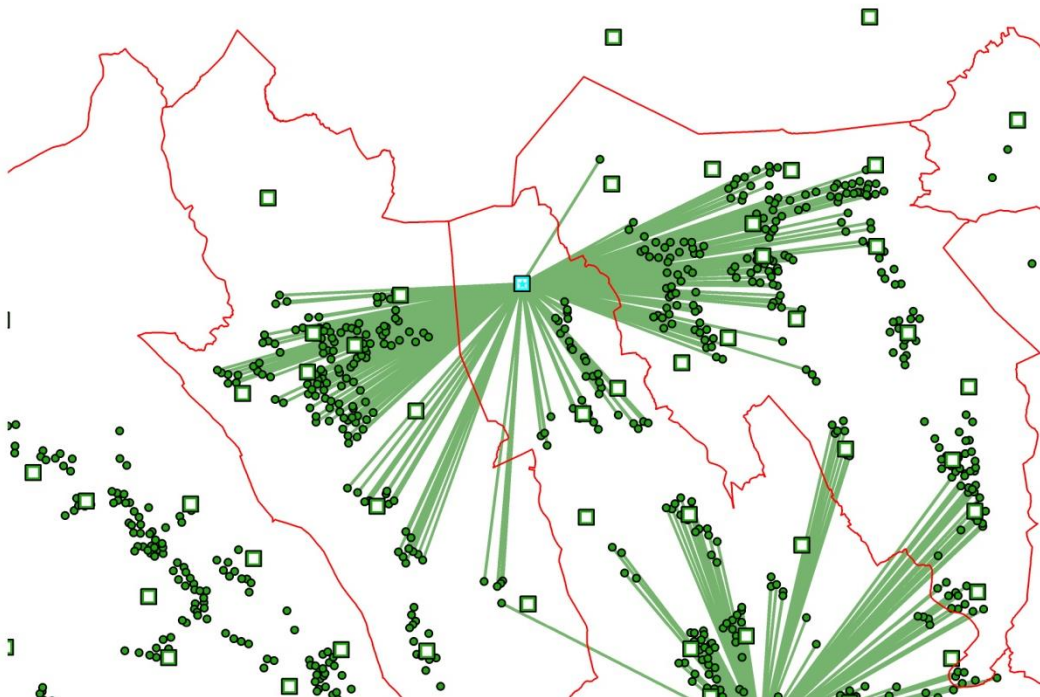


Figure 4.14: Second Optimal Location in Caerphilly



Figures 4.5 to 4.14 show each of the ten optimal ward chosen with their corresponding dispersed demand locations.

4.3. Further Evaluation of Solution Results

Figure 4.2 is a summary of some features of the coverage of each optimal location after solving the modelling heuristics. The Demand Weight column is indicative of the scale of demand assigned to each of the optimal locations. The values are summations of the likelihood indices for each demand point assigned to a corresponding Ward. The higher this value, the higher the level of usage of the chosen location is likely to be.

Figure 4.2: Coverage of Optimal Locations

Optimal Wards	Local Authority	Demand Weight	Demand Count
Cathays	Cardiff	61504	825
Stow Hill	Newport	41438	549
Cwmbwrla	Swansea	37343	431
Cefn Fforest	Caerphilly	22684	367
Offa	Wrexham	22597	285
Rhondda	Rhondda Cynon Taf	22418	423
Neath East	Neath Port Talbot	19143	287
Buttrills	The Vale of Glamorgan	18334	171
Bigyn	Carmarthenshire	17577	207
Twyn Carno	Caerphilly	17196	316

The fourth column shows the Demand Count which tells us how many demand points were allocated to each corresponding Ward. It should be borne in mind that for this analysis, Demand points is a composite of neighbourhoods/Output Areas and mediation service providers. For instance results in the Figure show that given an average trip length of 7 miles, those who are most likely to use a dispute resolution centre located in Cathays could come from a combination of around 825 neighbourhoods and mediation service providers.

The optimal Ward chosen in Cardiff is Cathays. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Cardiff. However, based on the model parameters and assumptions, a mediation centre at this site is also likely to attract potential users from the Vale of Glamorgan and Caerphilly.

The optimal Ward chosen in Newport is Stow Hill. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Newport. However, based on the model parameters and assumptions, a mediation centre at this site is also likely to attract potential users mainly from Torfaen and a small proportion from Caerphilly.

The optimal Ward chosen in Swansea is Cwmbwrla. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Swansea. The evidence suggests that users from adjoining Local Authorities are unlikely to patronise the centre.

The first optimal Ward chosen in Caerphilly is Cefn Fforest. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Caerphilly. However, based on the model parameters and assumptions, a mediation centre at this site is also likely to attract potential users mainly from Blaenau Gwent and from some pockets of neighbourhoods in Merthyr Tydfil.

The second optimal Ward chosen in Caerphilly is Twyn Carno. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from outside Caerphilly. The two adjoining Local Authorities that are likely to provide the majority of the sites users are Blaenau Gwent and Merthyr Tydfil.

The optimal Ward chosen in Wrexham (and north Wales) is Offa. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Wrexham.

The optimal Ward chosen in Rhondda Cynon Taf is Rhondda. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Rhondda Cynon Taf and pockets of neighbourhoods in Caerphilly.

The optimal Ward chosen in Neath Port Talbot (and north Wales) is Neath East. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within Neath Port Talbot.

The optimal Ward chosen in the Vale of Glamorgan is Buttrills. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from within the Vale of Glamorgan.

The optimal Ward chosen in Carmarthenshire is Bigyn. Results from the analysis show that the majority of users of a centre in this location are likely to be drawn from Newport. However, based on the model parameters and assumptions, a mediation centre at this site is also likely to attract potential users mainly from Swansea.

5. Summary

The study described in this report shows that local level disparities exist in the levels of demand for and supply of mediation services in Wales. The study has further exposed some spatial patterns of the rates at which the adult population in Wales make use of family mediation services. This report has also demonstrated that the development and application of modelling techniques such as those used in this study can be helpful in interpreting geographically referenced datasets for the Justice and Community Safety sector in Wales and constructing specialised and bespoke solutions.

Exploratory spatial data analysis and modelling has been undertaken, using the Preliminary 2011 England and Wales Output Area Classification, in combination with ancillary datasets. The results show that the proxy indicator for mediation demand (family mediation usage) is more or less likely to be correlated with different community types enabling the identification of special population groups.

The location-allocation modelling technique used to choose optimal locations in Section 4 is based on a wide range of parameters and assumptions which have been clearly defined in the section. Amongst the ten optimal Wards chosen which were chosen with the hope of maximising attendance at the proposed centres, only one is situated in the Northern half of the country.

The broader implications of these analyses and visualisations needs to be appraised with regard to the propagation of information to positively influence change in reducing inequalities in the population penetration of alternative dispute resolution. The belief is that these techniques can also provide intelligence to validate and exemplify precision in resource allocation. This is of particularly relevance to funding intervention initiatives tied to specific community programmes aimed at strengthening equity in access to justice across Wales.

References

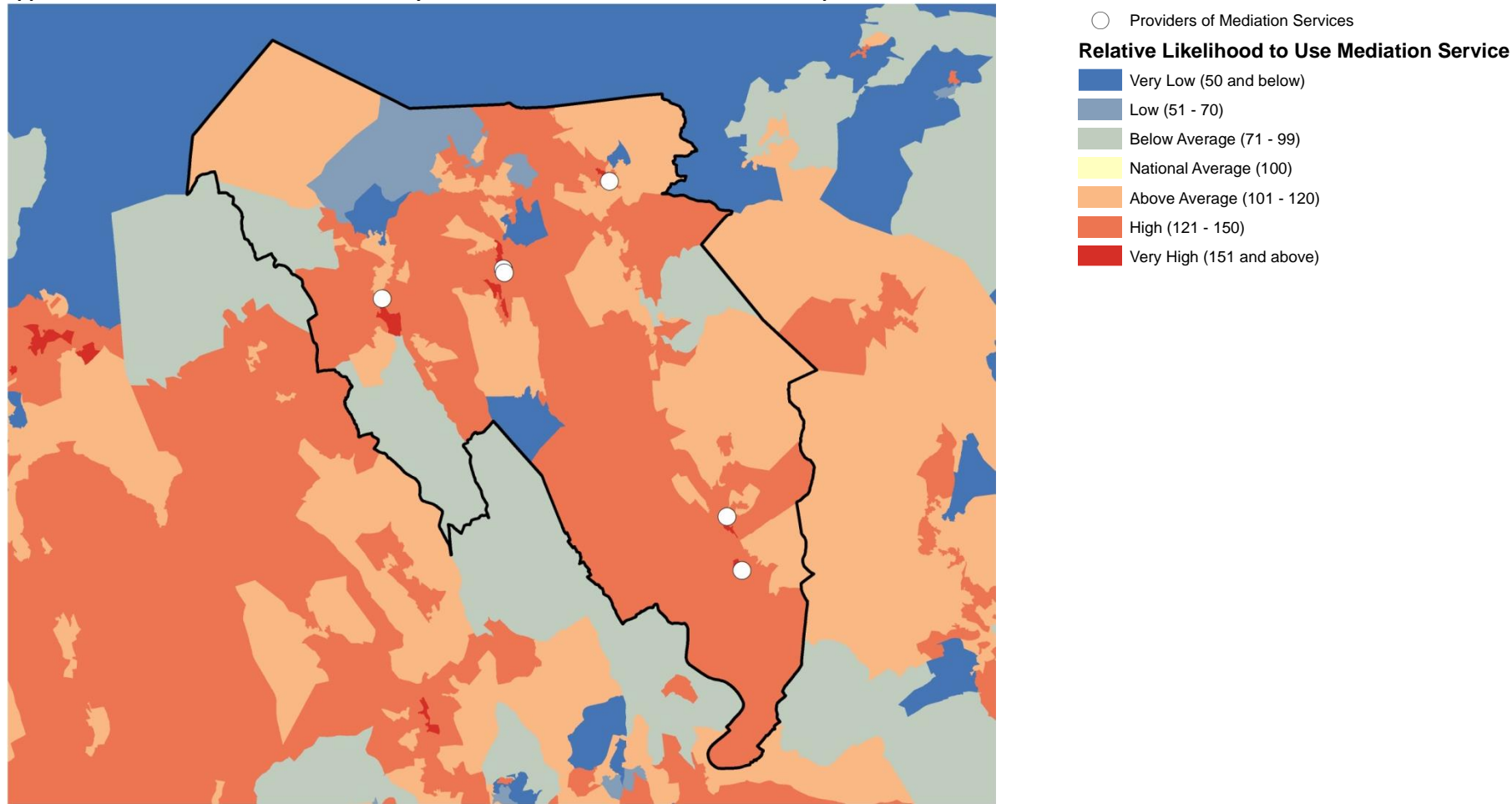
Harris, R., Sleight, P., Webber, R. (2005): **Geodemographics, GIS and Neighbourhood Targeting**, John Wiley & Sons Ltd.

ONS (2013) **Preliminary 2011 England and Wales Output Area Classification: Pen Portraits**, Office for National Statistics, United Kingdom.

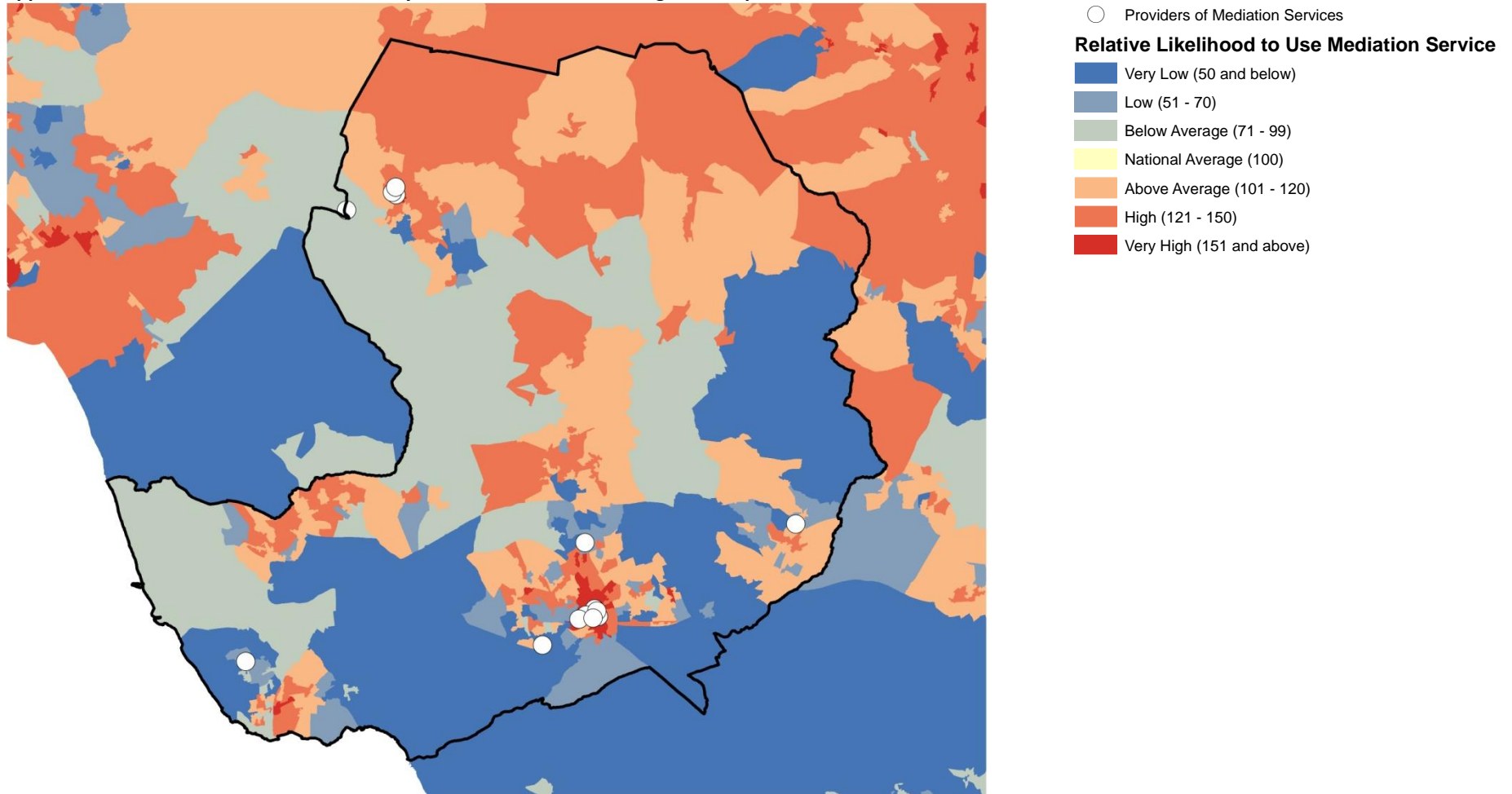
DfT (2013) **National Travel Survey: 2012**, Department for Transport, United Kingdom.

Appendices

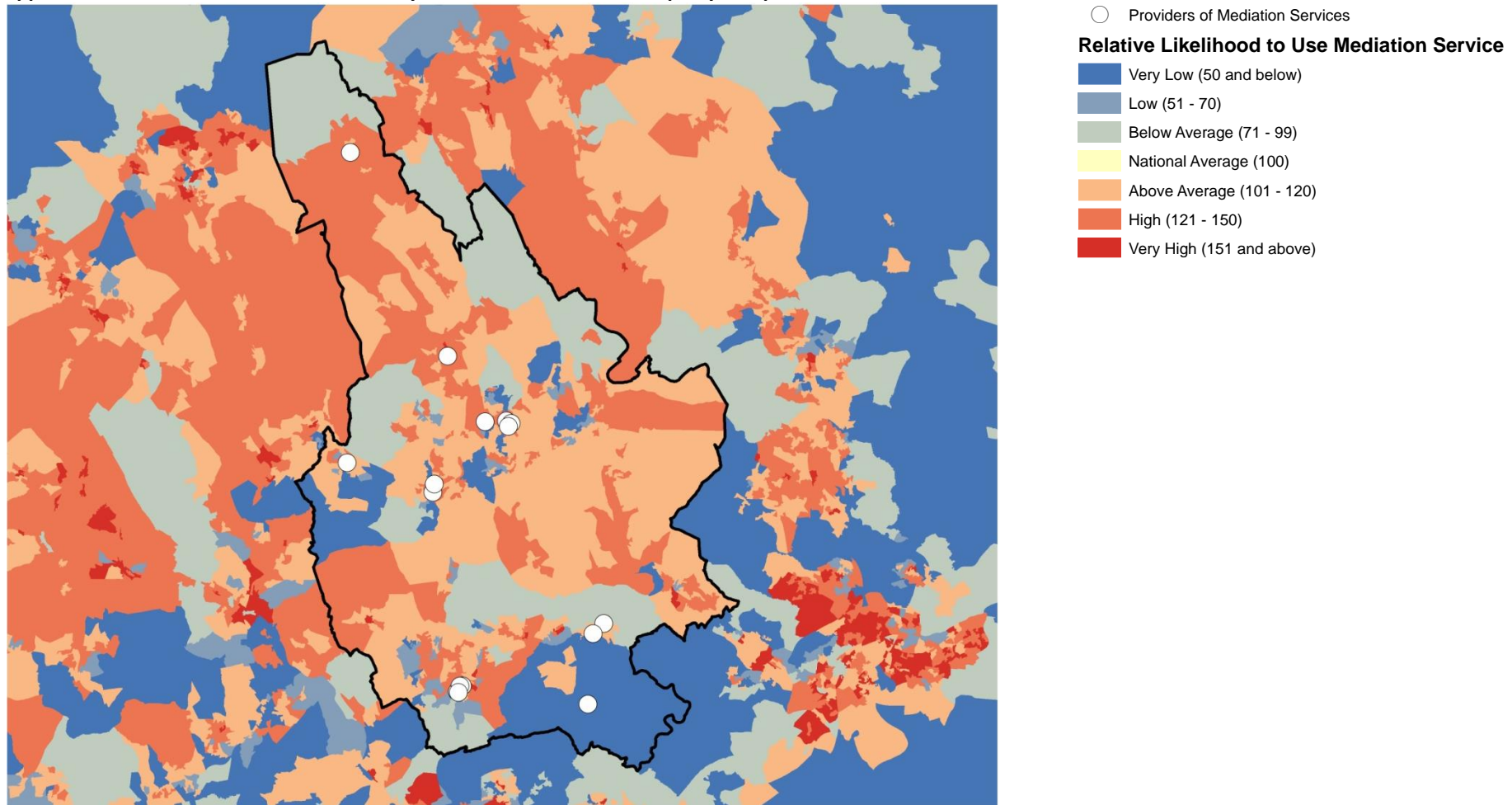
Appendix 1: Relative Likelihood to Use Family Mediation Services in Blaenau Gwent vs. Spatial Distribution of Providers of Mediation Services



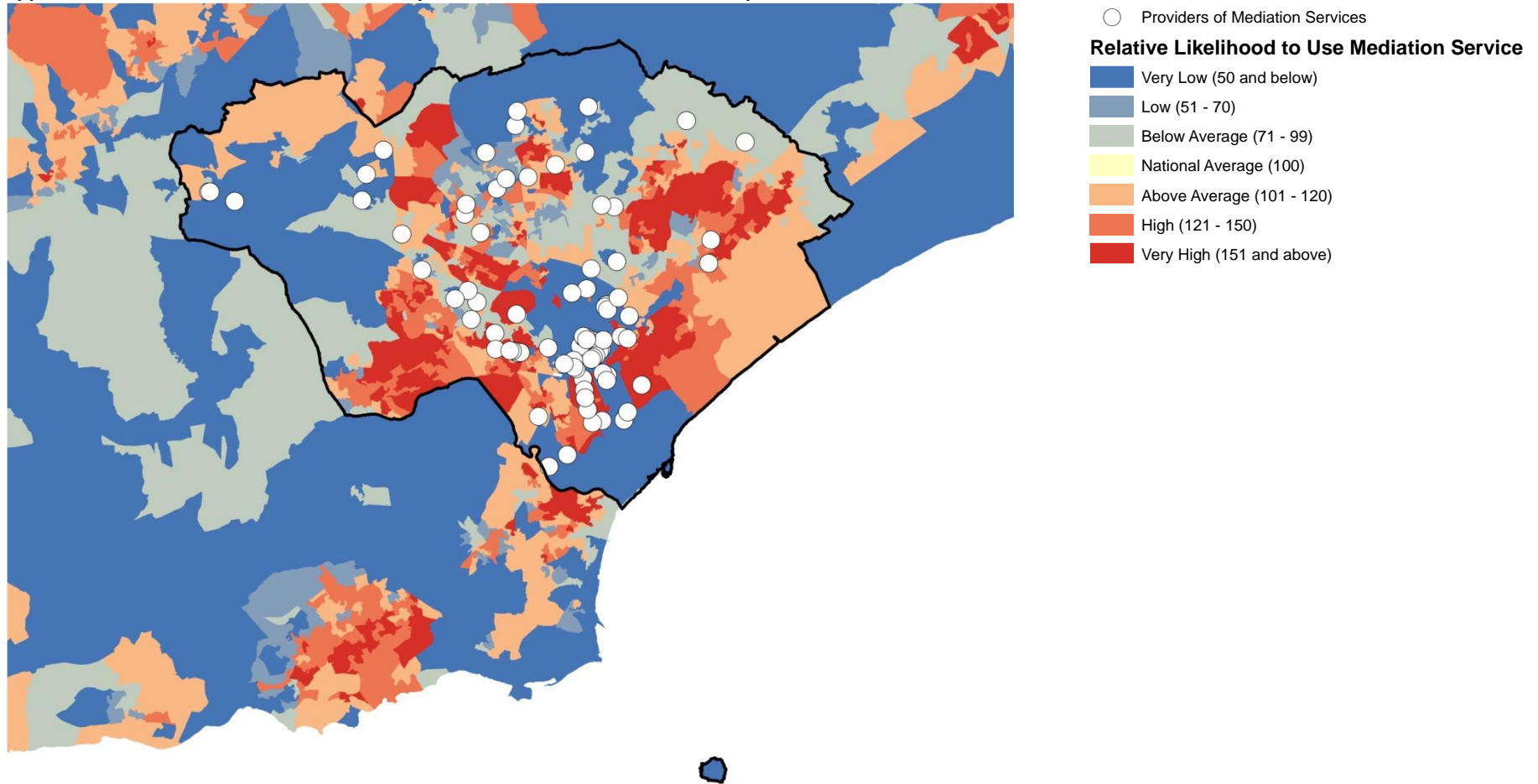
Appendix 2: Relative Likelihood to Use Family Mediation Services in Bridgend vs. Spatial Distribution of Providers of Mediation Services



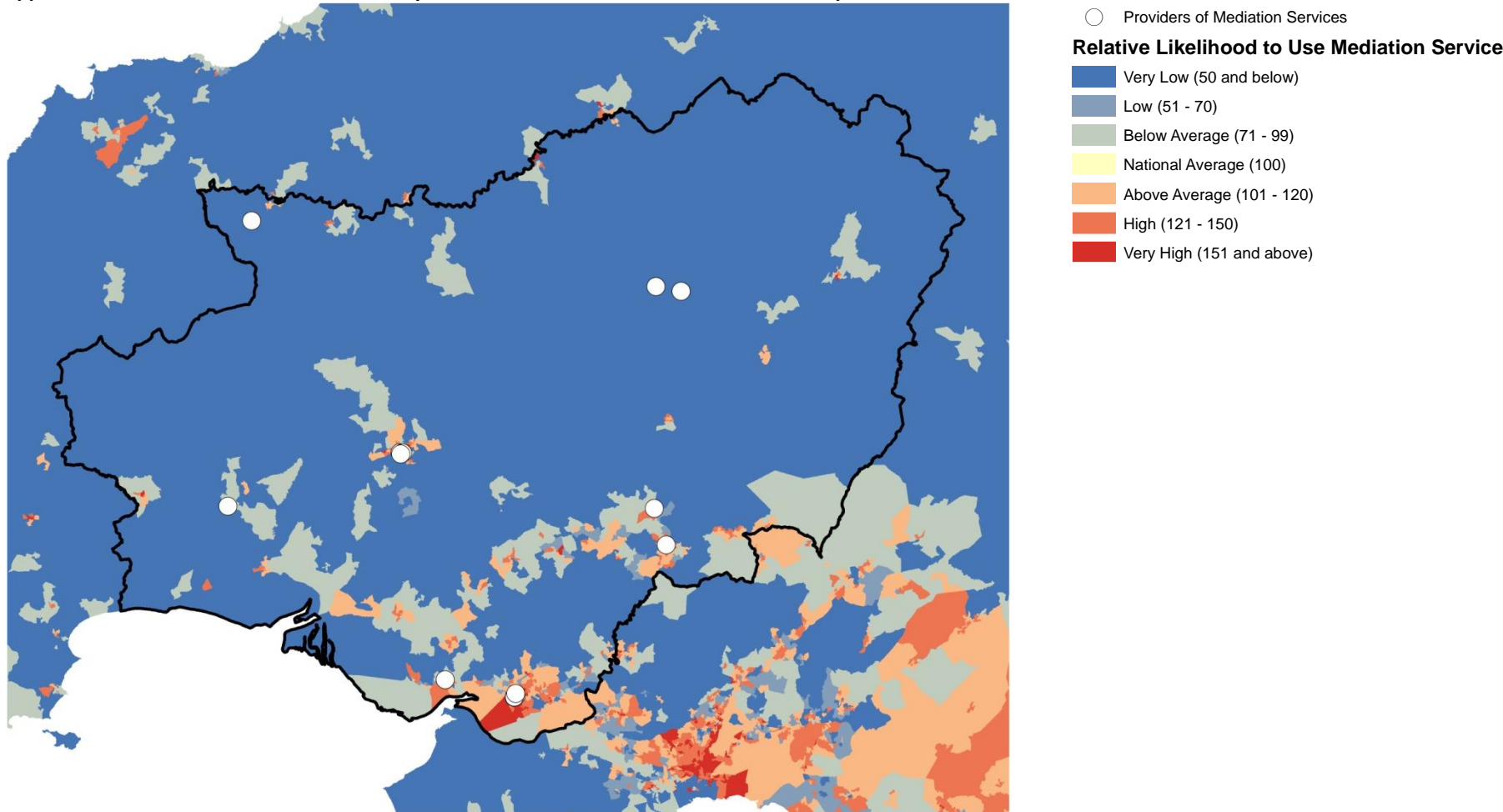
Appendix 3: Relative Likelihood to Use Family Mediation Services in Caerphilly vs. Spatial Distribution of Providers of Mediation Services



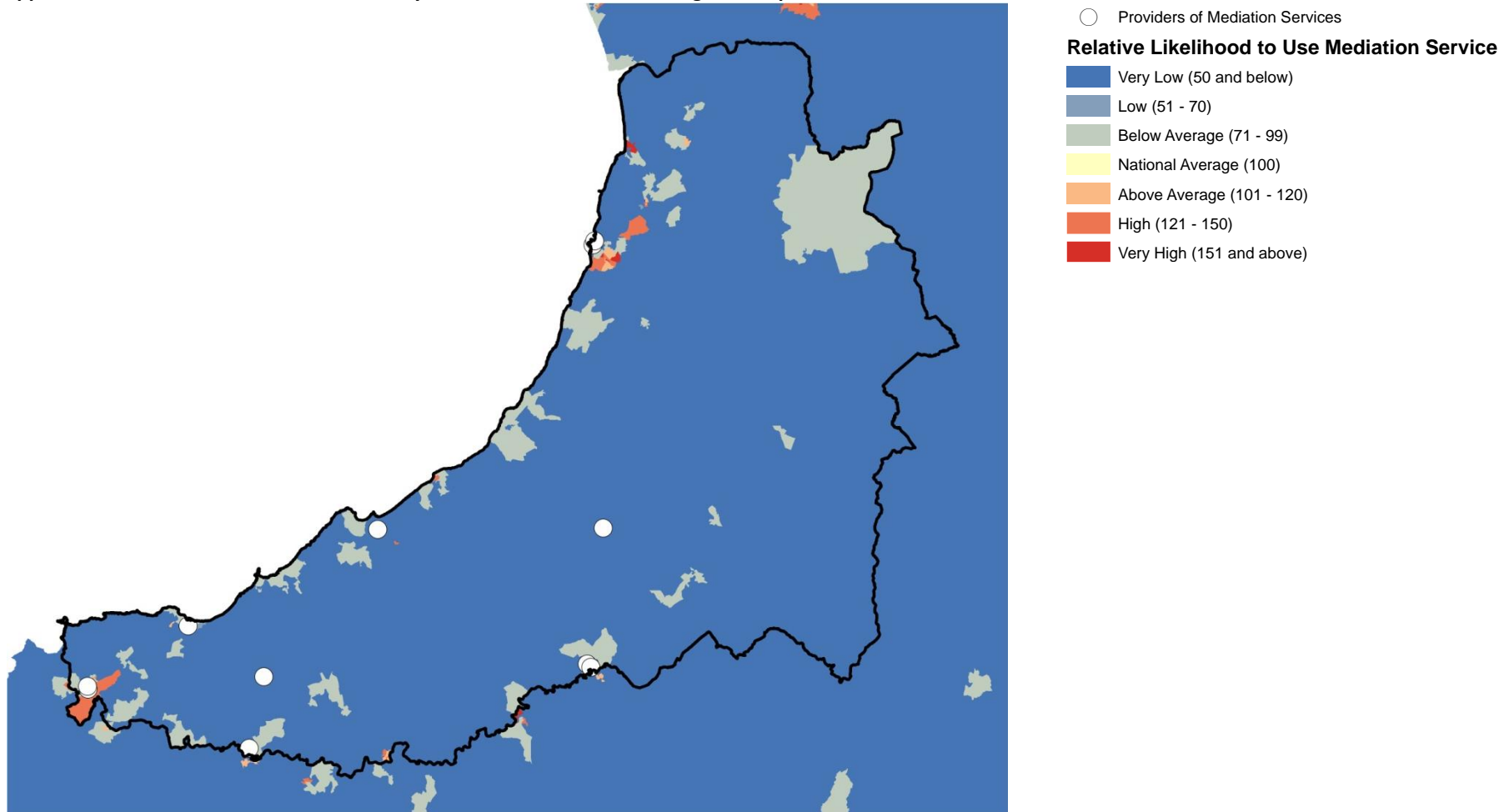
Appendix 4: Relative Likelihood to Use Family Mediation Services in Cardiff vs. Spatial Distribution of Providers of Mediation Services



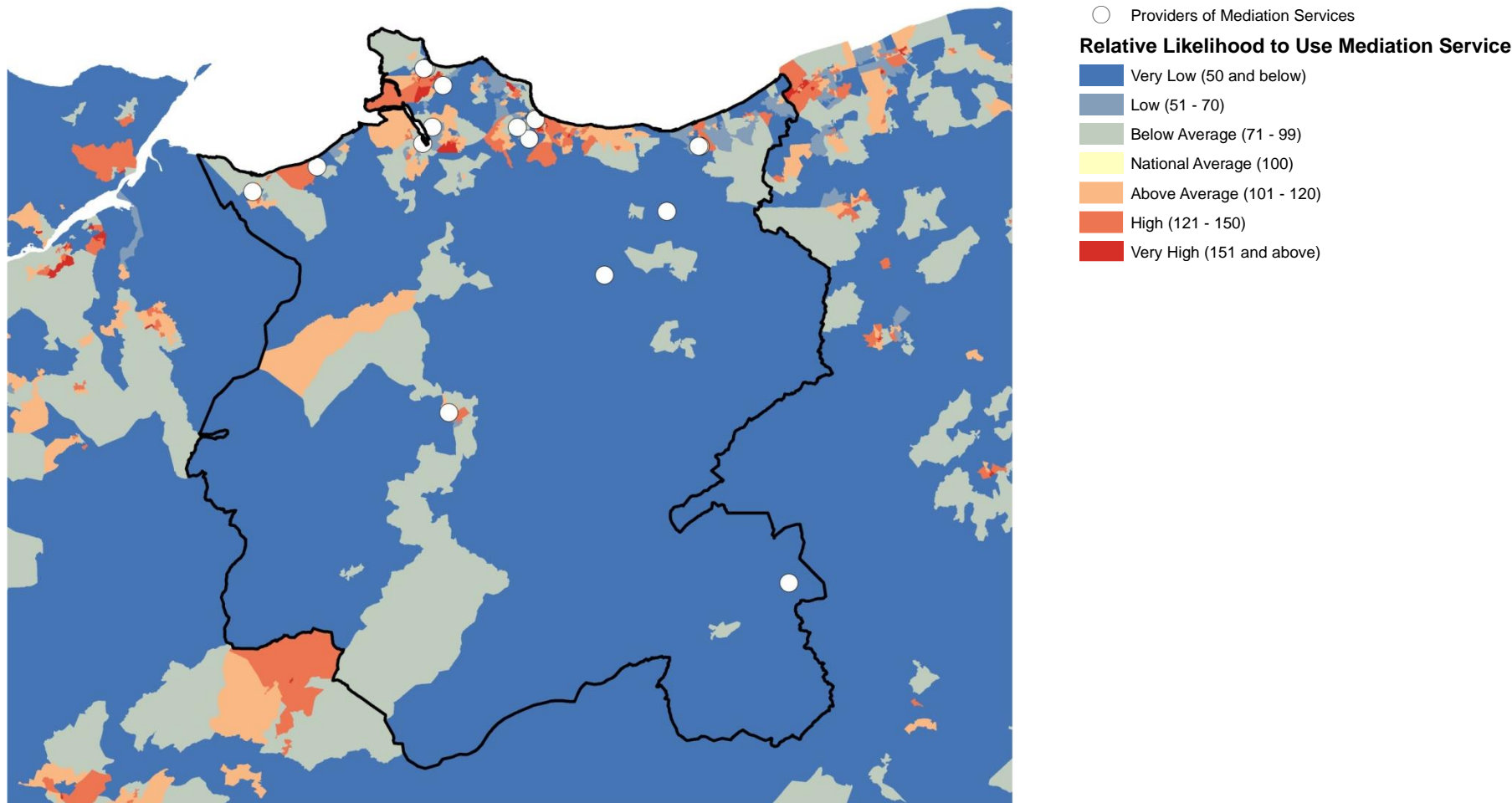
Appendix 5: Relative Likelihood to Use Family Mediation Services in Carmarthenshire vs. Spatial Distribution of Providers of Mediation Services



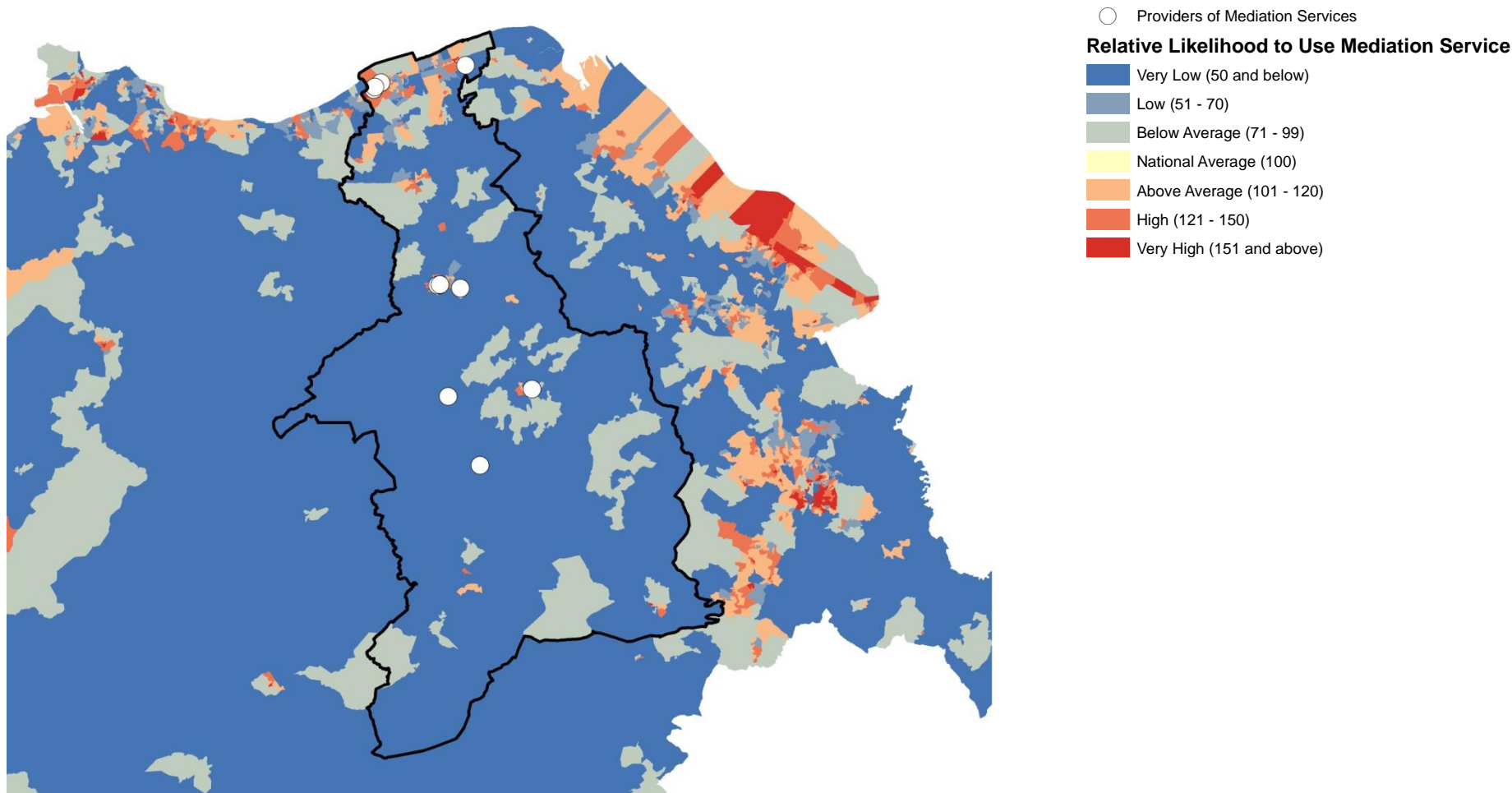
Appendix 6: Relative Likelihood to Use Family Mediation Services in Ceredigion vs. Spatial Distribution of Providers of Mediation Services



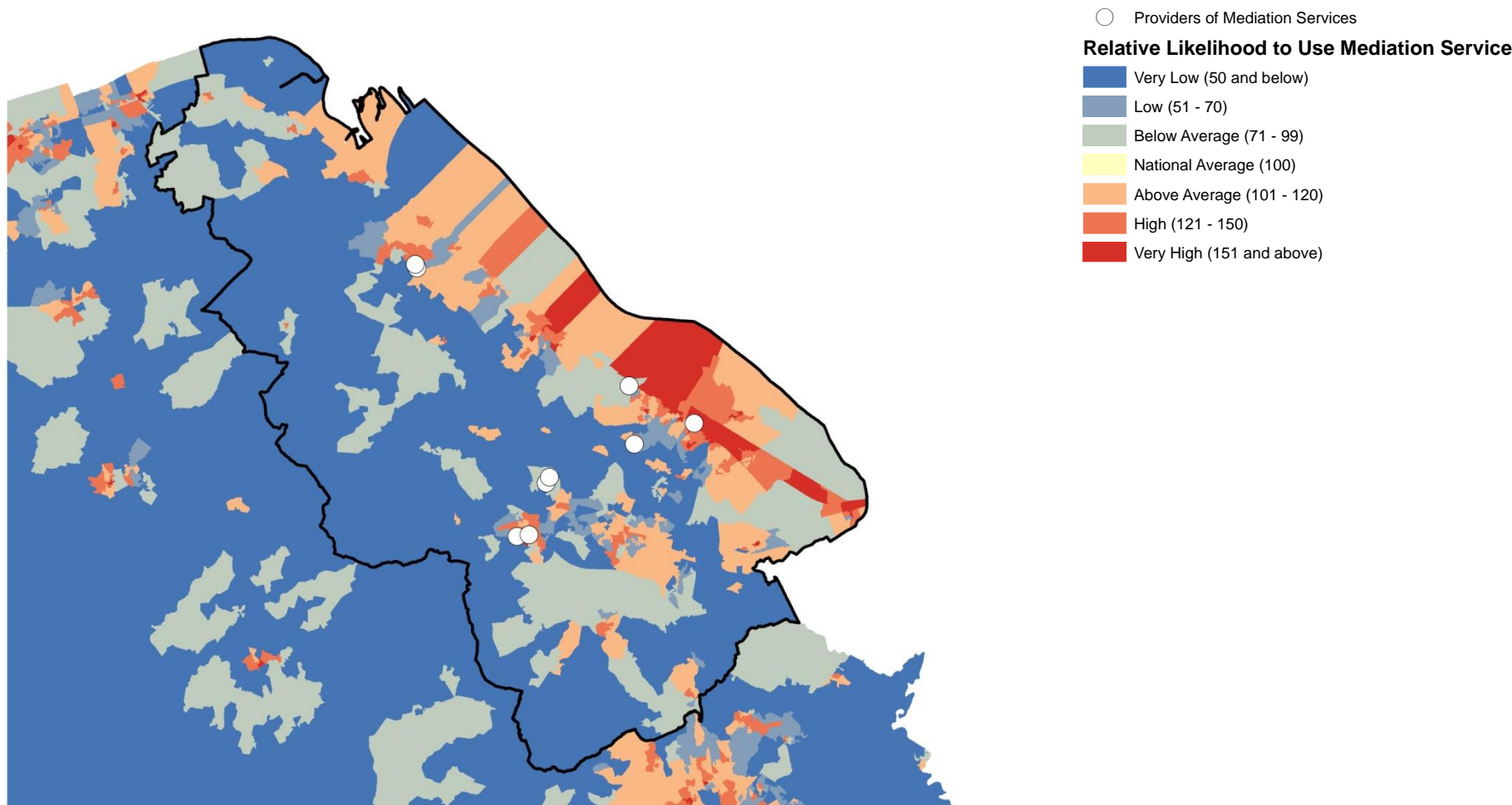
Appendix 7: Relative Likelihood to Use Family Mediation Services in Conwy vs. Spatial Distribution of Providers of Mediation Services



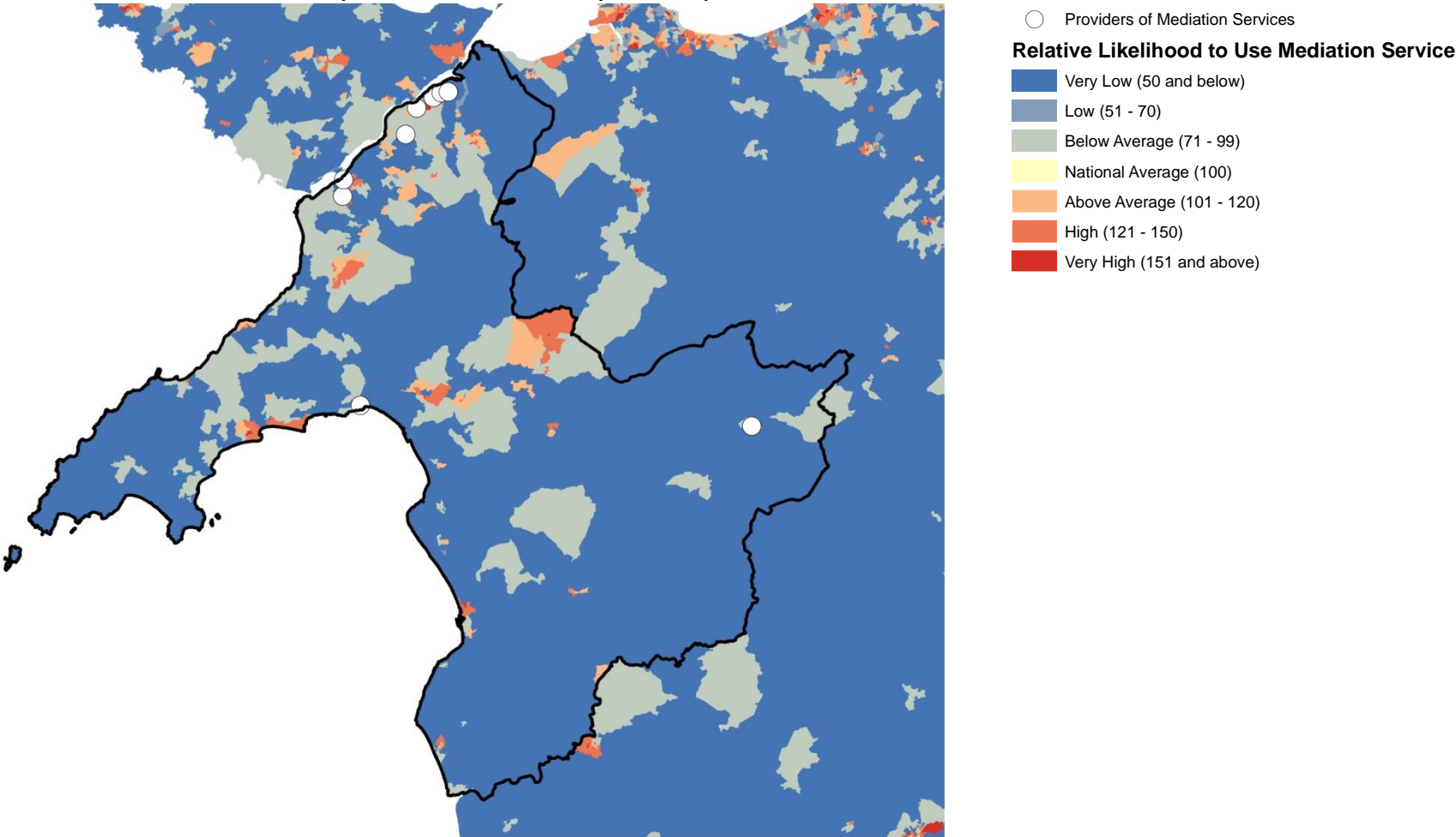
Appendix 8: Relative Likelihood to Use Family Mediation Services in Denbighshire vs. Spatial Distribution of Providers of Mediation Services



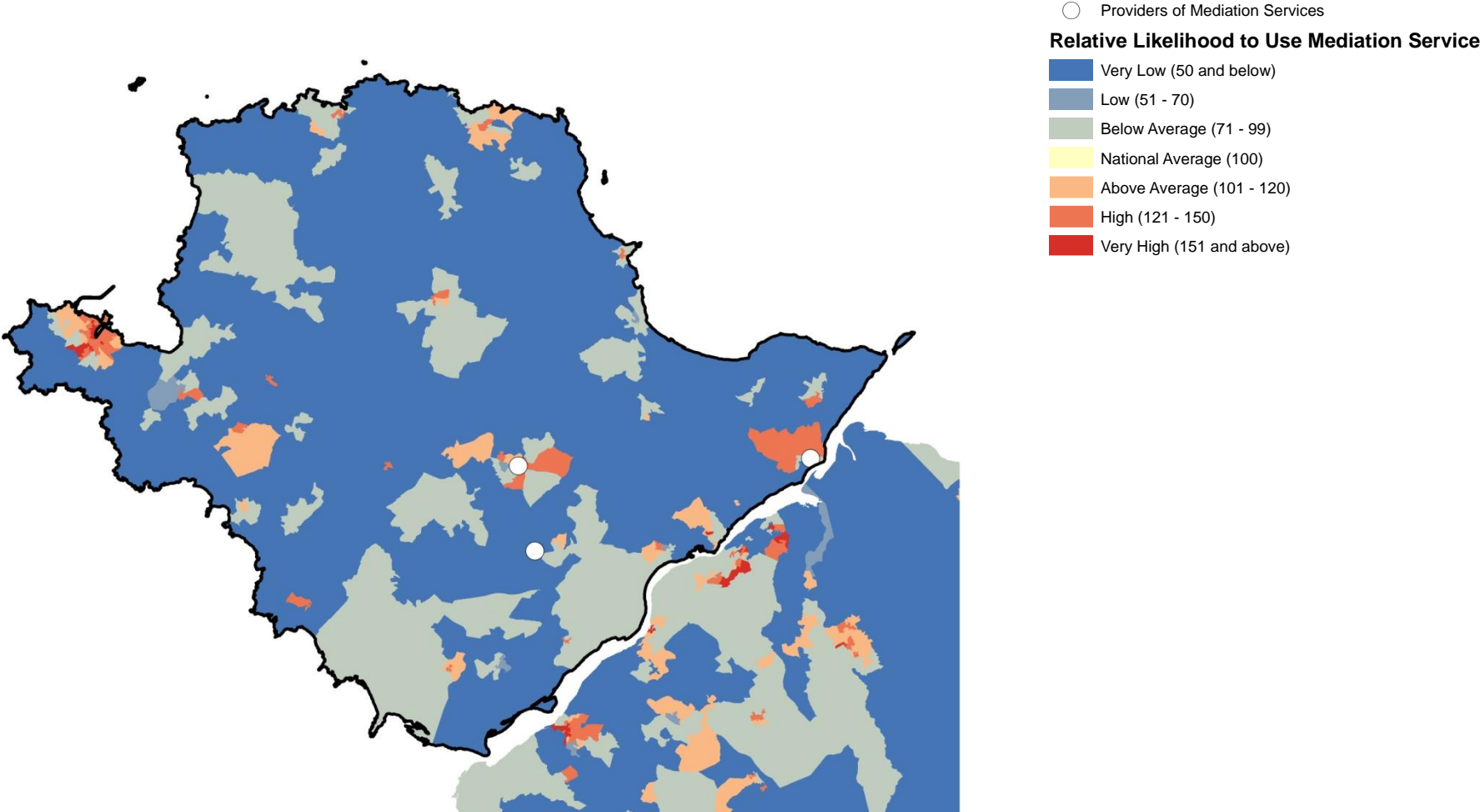
Appendix 9: Relative Likelihood to Use Family Mediation Services in Flintshire vs. Spatial Distribution of Providers of Mediation Services



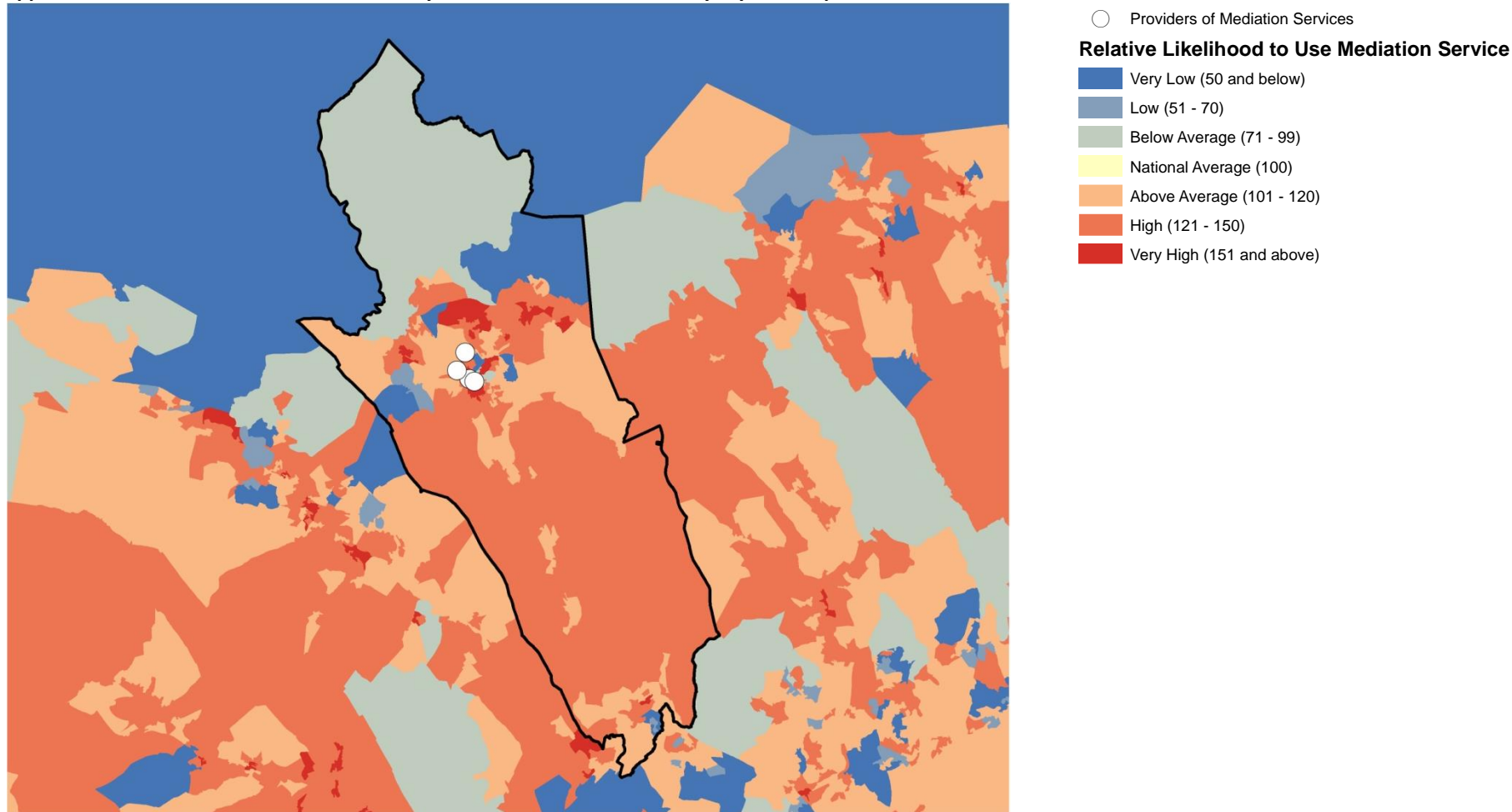
Appendix 10: Relative Likelihood to Use Family Mediation Services in Gwynedd vs. Spatial Distribution of Providers of Mediation Services



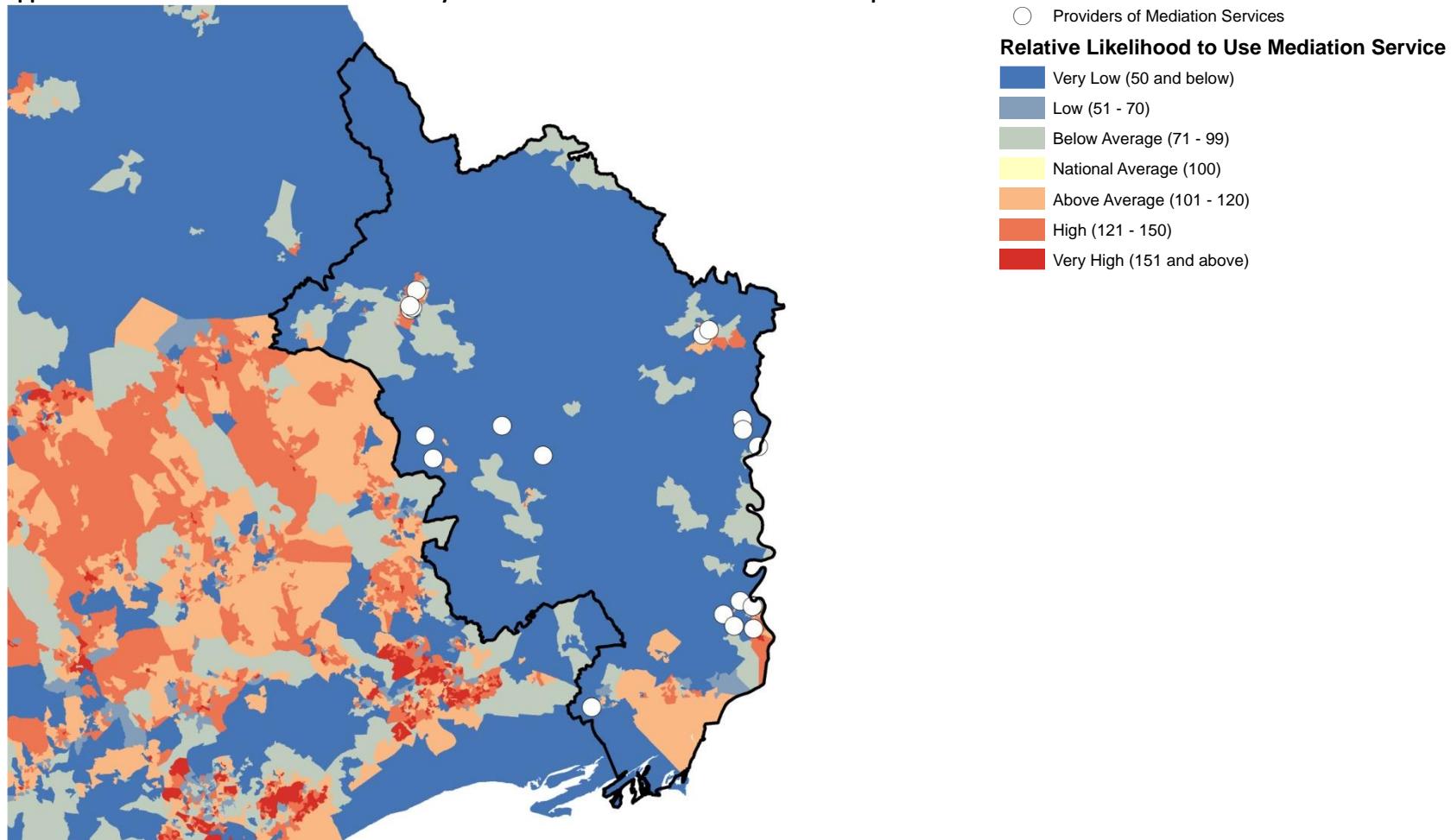
Appendix 11: Relative Likelihood to Use Family Mediation Services in Isle of Anglesey vs. Spatial Distribution of Providers of Mediation Services



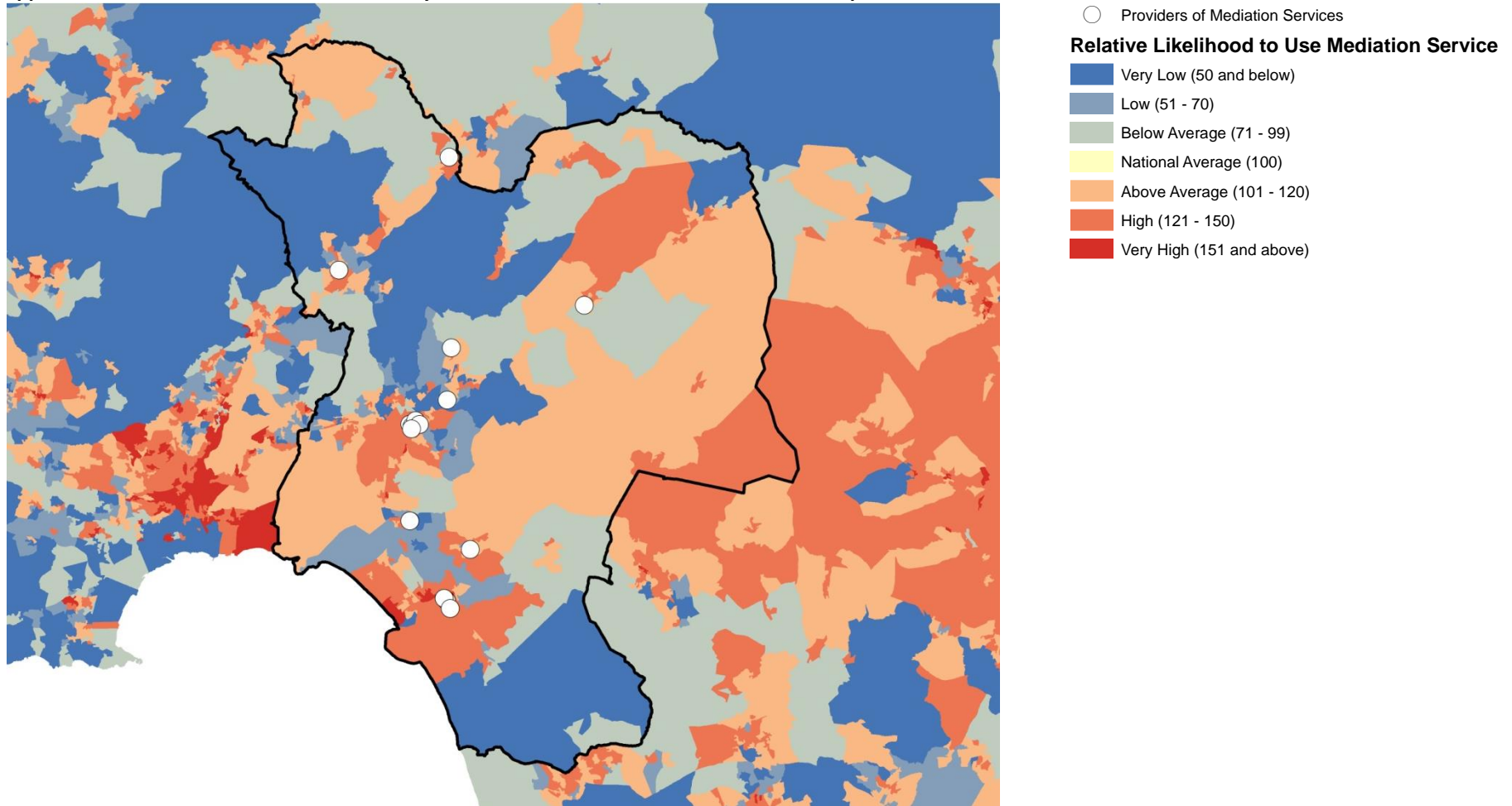
Appendix 12: Relative Likelihood to Use Family Mediation Services in Merthyr Tydfil vs. Spatial Distribution of Providers of Mediation Services



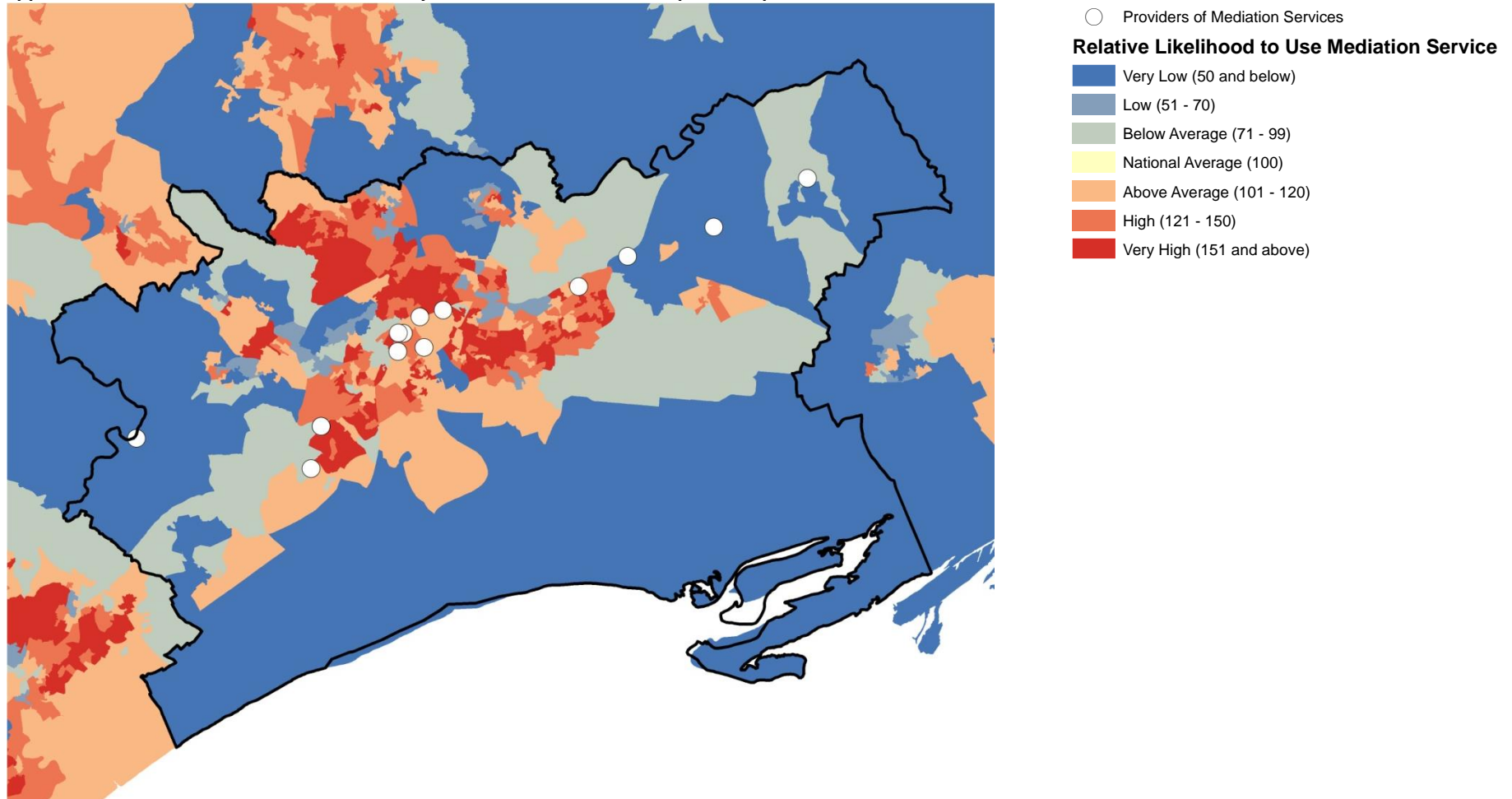
Appendix 13: Relative Likelihood to Use Family Mediation Services in Monmouthshire vs. Spatial Distribution of Providers of Mediation Services



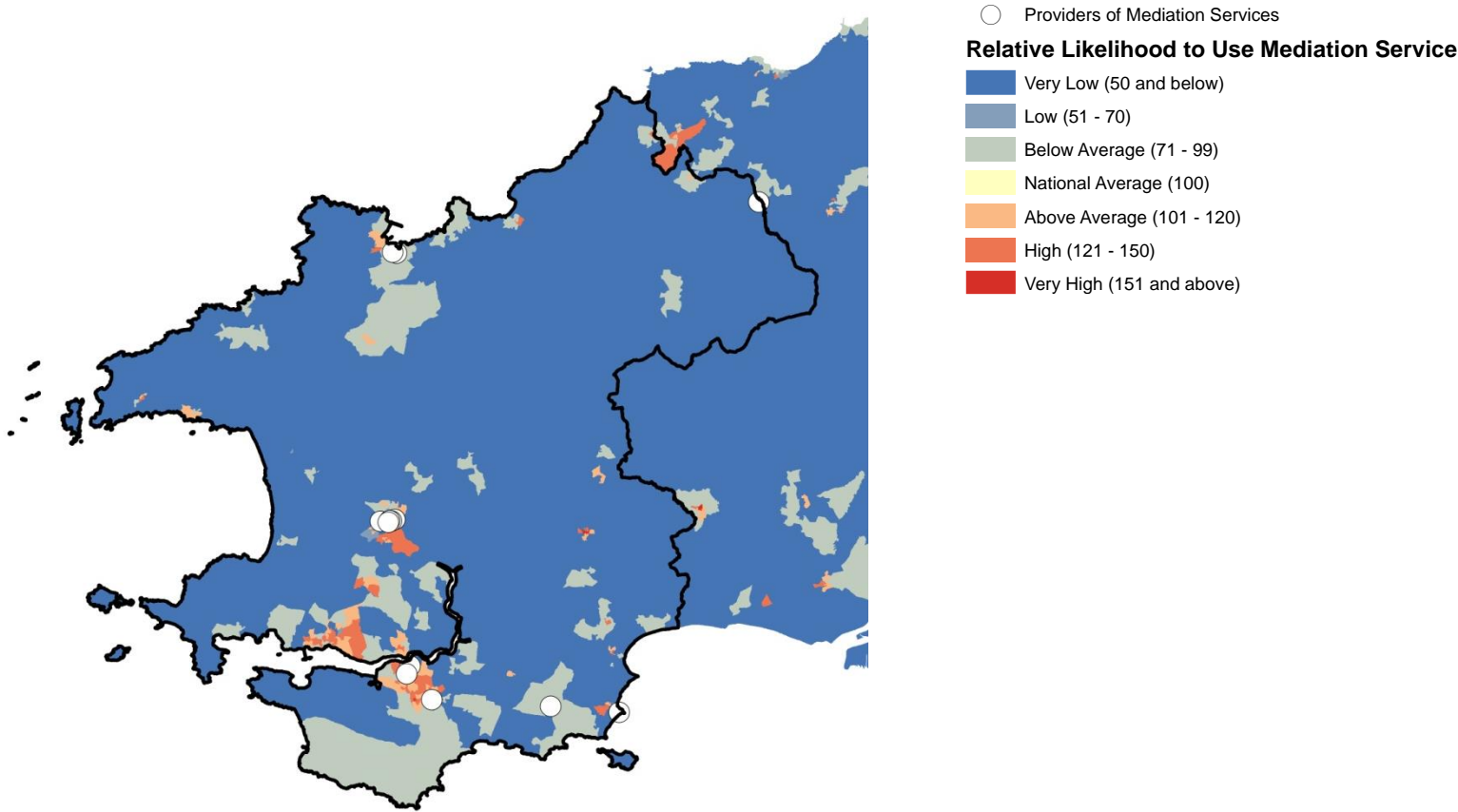
Appendix 14: Relative Likelihood to Use Family Mediation Services in Neath Port Talbot vs. Spatial Distribution of Providers of Mediation Services



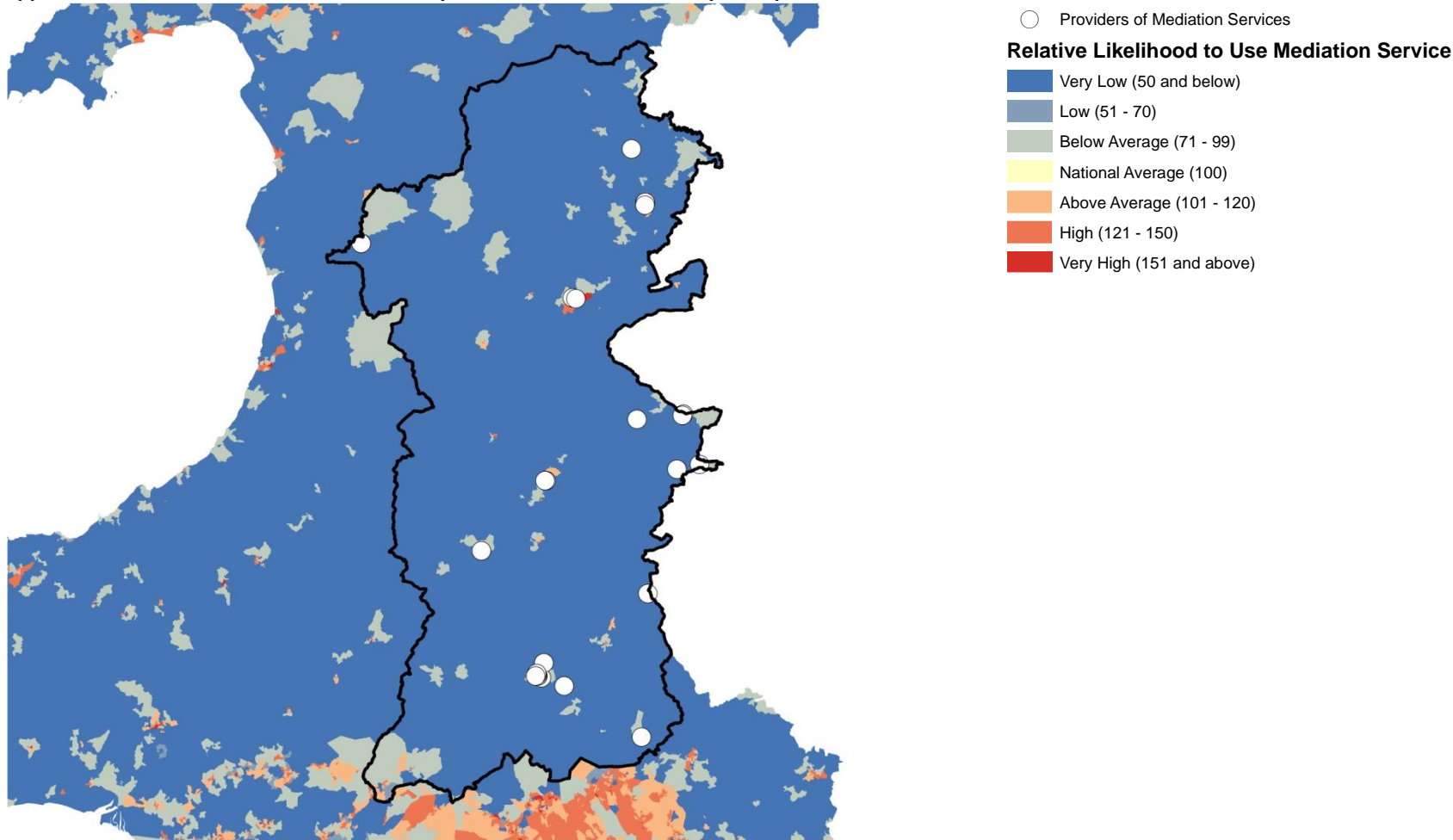
Appendix 15: Relative Likelihood to Use Family Mediation Services in Newport vs. Spatial Distribution of Providers of Mediation Services



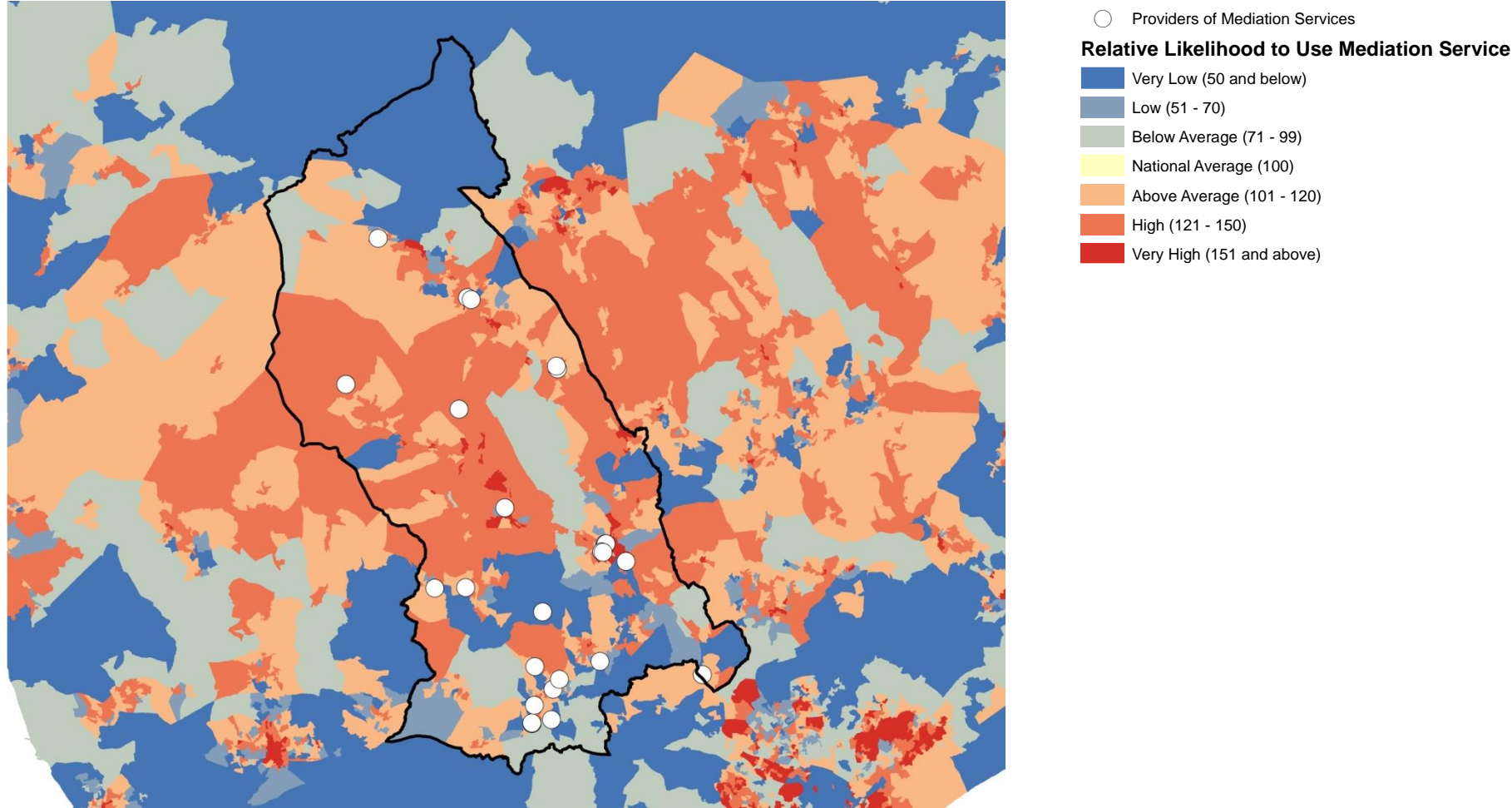
Appendix 16: Relative Likelihood to Use Family Mediation Services in Pembrokeshire vs. Spatial Distribution of Providers of Mediation Services



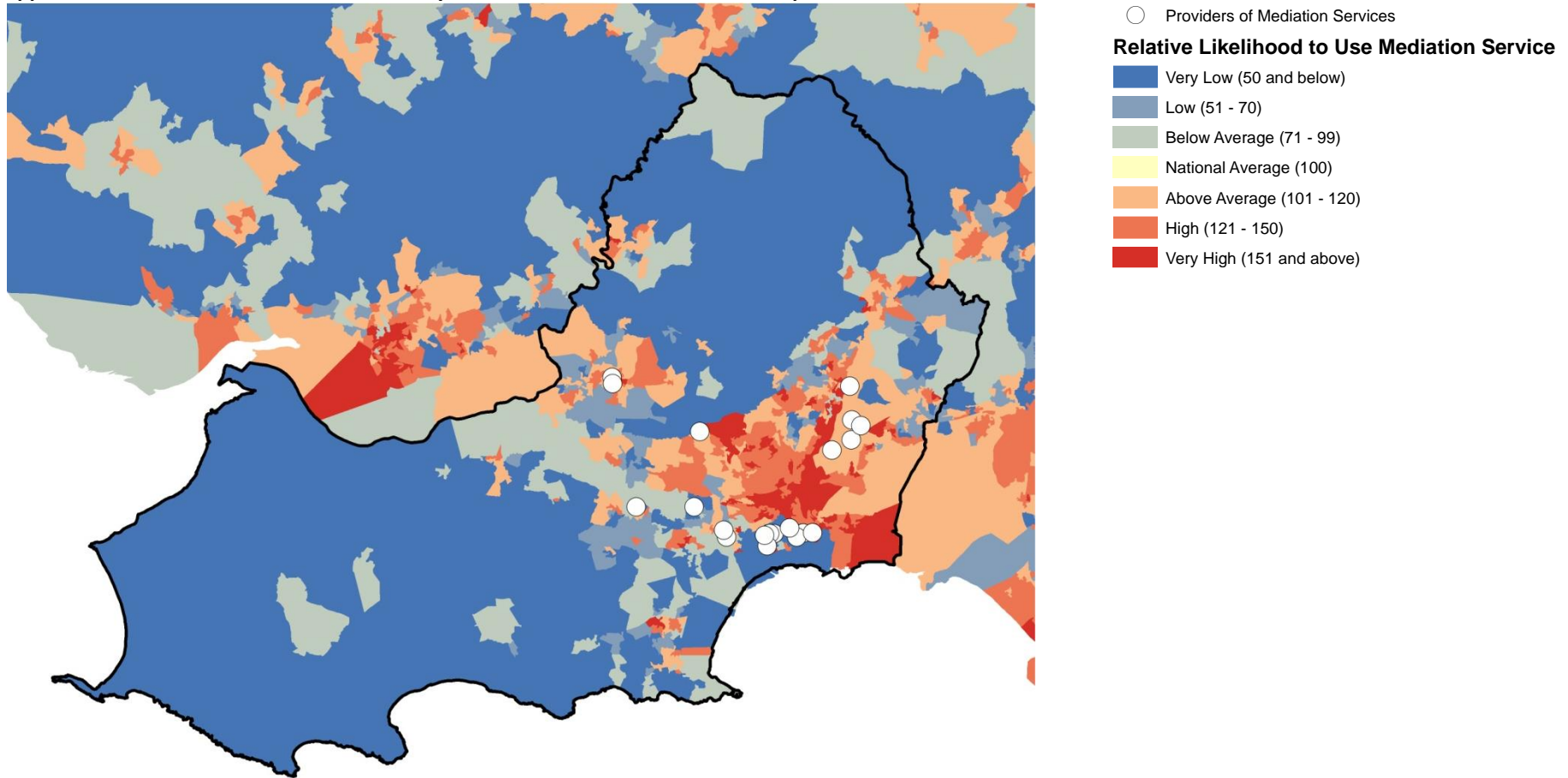
Appendix 17: Relative Likelihood to Use Family Mediation Services in Powys vs. Spatial Distribution of Providers of Mediation Services



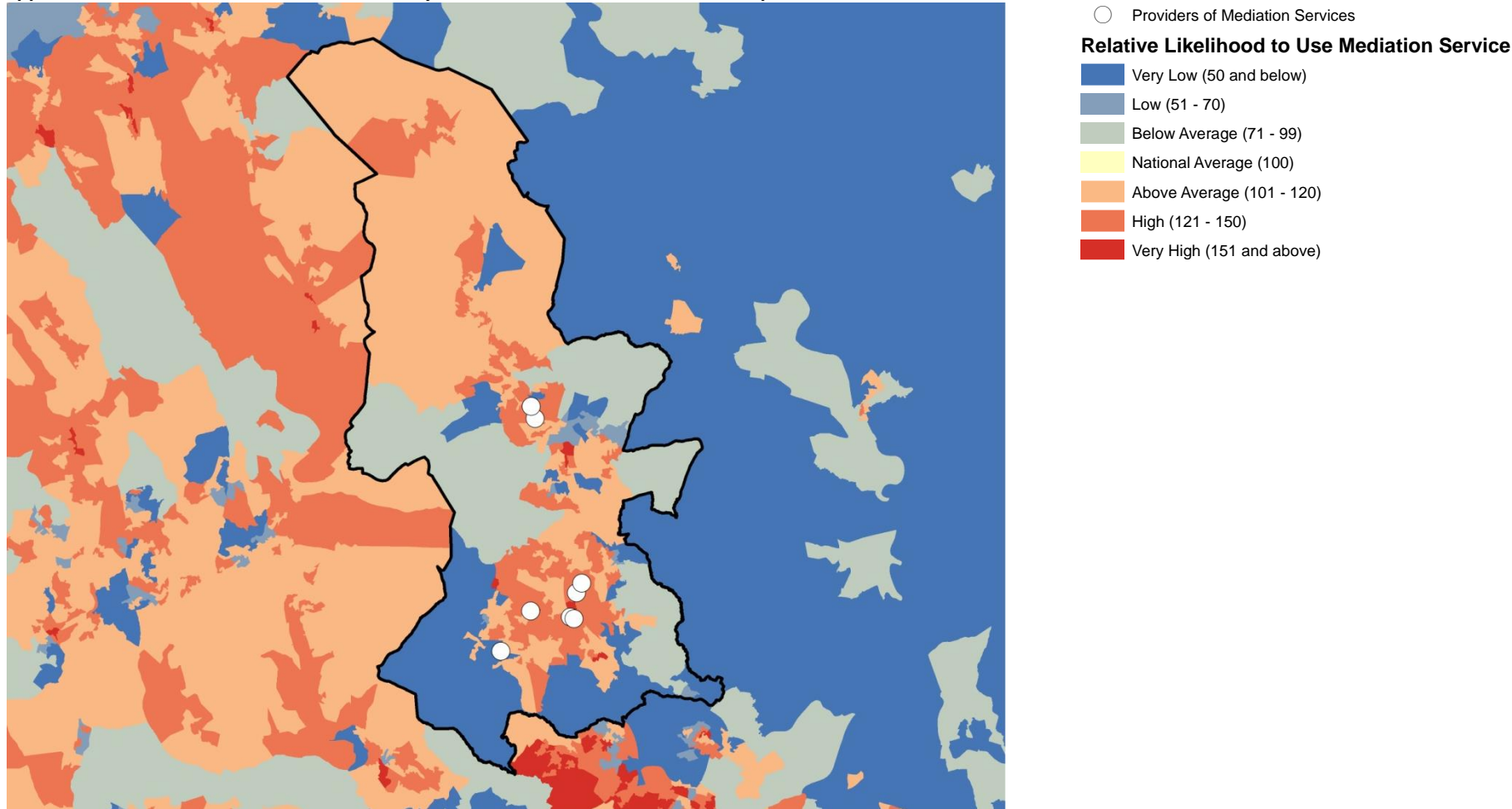
Appendix 18: Relative Likelihood to Use Family Mediation Services in Rhondda Cynon Taf vs. Spatial Distribution of Providers of Mediation Services



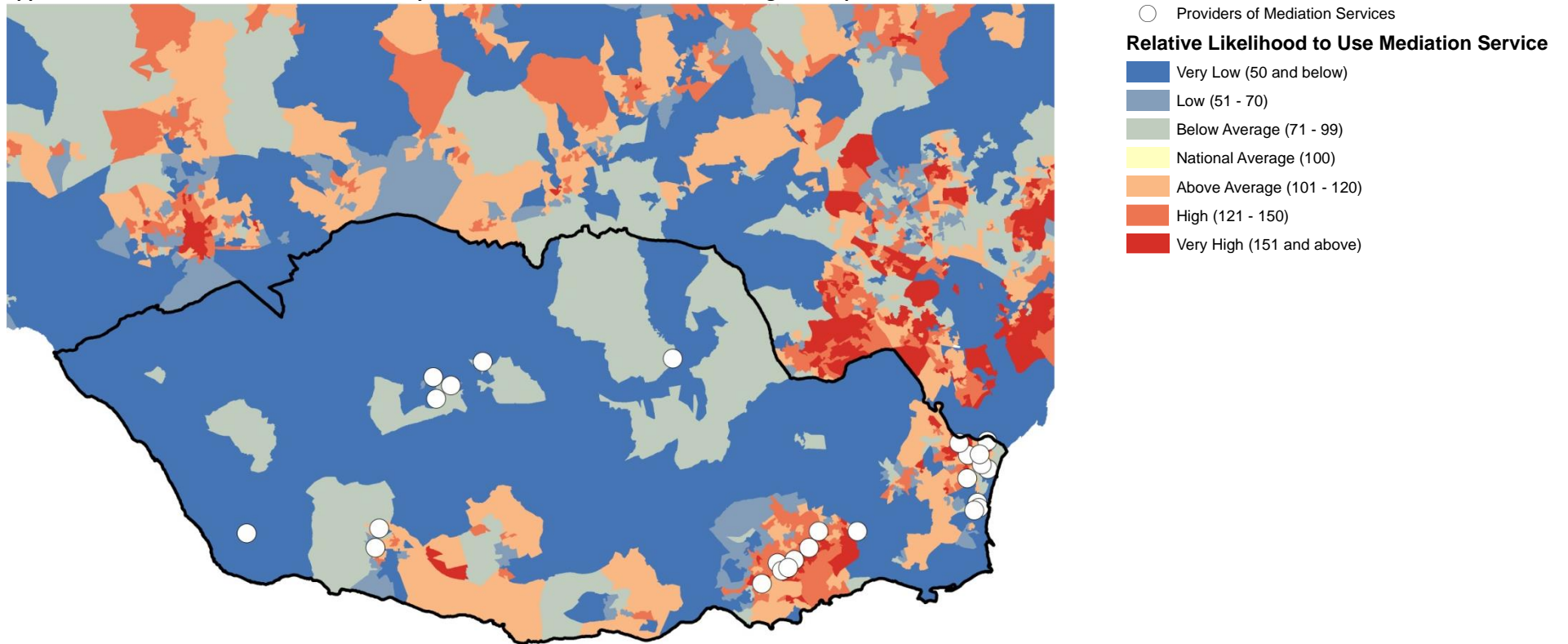
Appendix 19: Relative Likelihood to Use Family Mediation Services in Swansea vs. Spatial Distribution of Providers of Mediation Services



Appendix 20: Relative Likelihood to Use Family Mediation Services in Torfaen vs. Spatial Distribution of Providers of Mediation Services



Appendix 21: Relative Likelihood to Use Family Mediation Services in Vale of Glamorgan vs. Spatial Distribution of Providers of Mediation Services



Appendix 22: Relative Likelihood to Use Family Mediation Services in Wrexham vs. Spatial Distribution of Providers of Mediation Services

